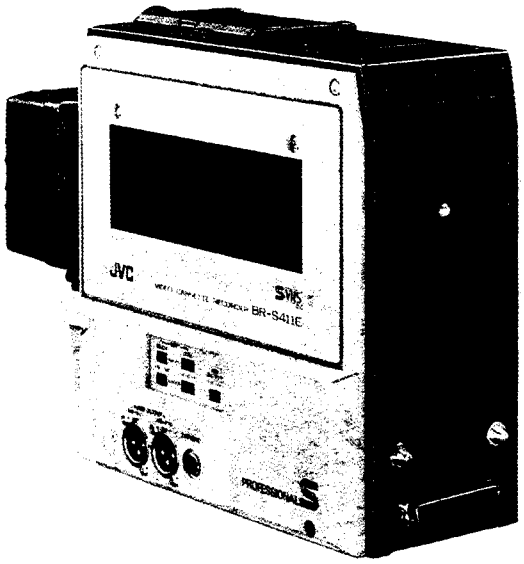
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

BR-S411E/SA-S41E



S-VHS 625 VHS PAL

Hi-Fi

HQ High Quality

SPECIFICATIONS

GENERAL

Format	: VHS/S-VHS Europe standard
Video signal system	: PAL-type colour signal/ PAL-type Y/C signal
Tape speed	: 23.39 mm/sec
Recording time	: 180 min. with JVC SE-180 or E-180
Power requirement	: DC 12 V
Power consumption	: 16 watts
Dimensions	: 297(W) x 240(H) x 137(D) mm
Weight	: 4.0 kg (without accessories)
Operating temperature	: 0°C to 40°C, Non-water proof
Storage temperature	: –20°C to 50°C

VIDEO

Recording and Playback system	: Rotary two-head helical scanning system
Luminance	: FM recording
Colour	: Phase shift, converted sub-carrier direct recording
Video output	
Line	: 1.0 Vp-p, 75 ohms, unbalanced
Y/C	: Y: 1.0 Vp-p, 75 ohms, unbalanced
	: C: 0.3 Vp-p (Burst), 75 ohms, unbalanced
Video S/N	: More than 45 dB
Resolution	
S-VHS mode	: 400 lines
VHS mode	: 250 lines

AUDIO

AUDIO INPUT	: –20/+4 dB, 10 k-ohms, balanced, XLR
(Microphone)	: –60 dB, 3 k-ohms, balanced, XLR
Line output	: –6/–20 dB, 600 ohms, balanced XLR
Earphone	: –25 to –45 dBs variable, 8 ohms load unbalanced
Frequency response	: 40 to 12,000 Hz (Normal)
	: 20 to 20,000 Hz (Hi-Fi)
Audio S/N	: 46 dB (Normal/NR-ON)/
(at 3 % distortion)	42 dB (Normal/NR-OFF)
Audio dynamic range	: 80 dB (Hi-Fi)
Wow and flutter	: 0.007 % WRMS (Hi-Fi)
ACCESSORIES	: Battery pack (NB-G1U) x 1, Battery holder x 1

No. 9198
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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

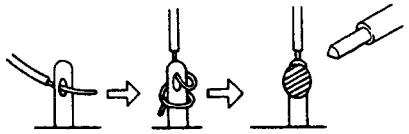


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

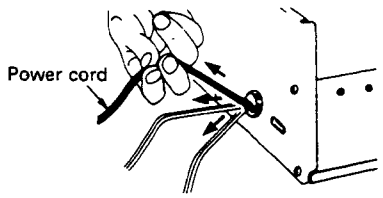


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

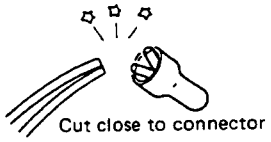


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

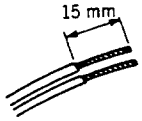


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

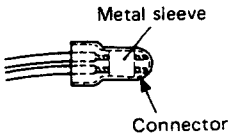


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

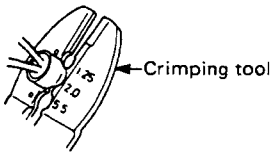


Fig. 6

(5) Check the four points noted in Fig. 7.

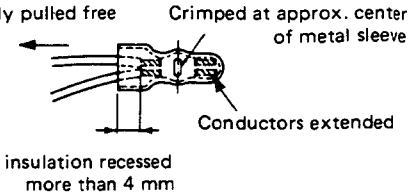


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

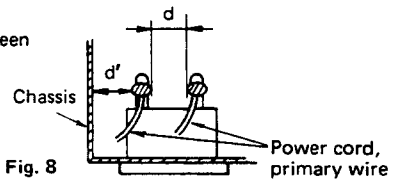


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

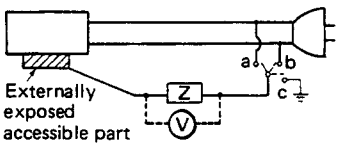


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

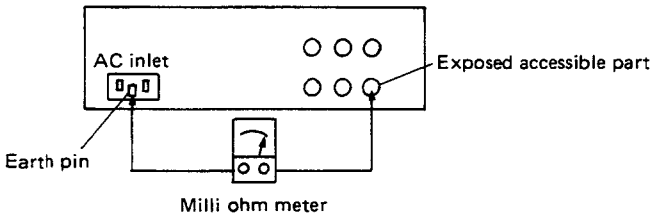


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

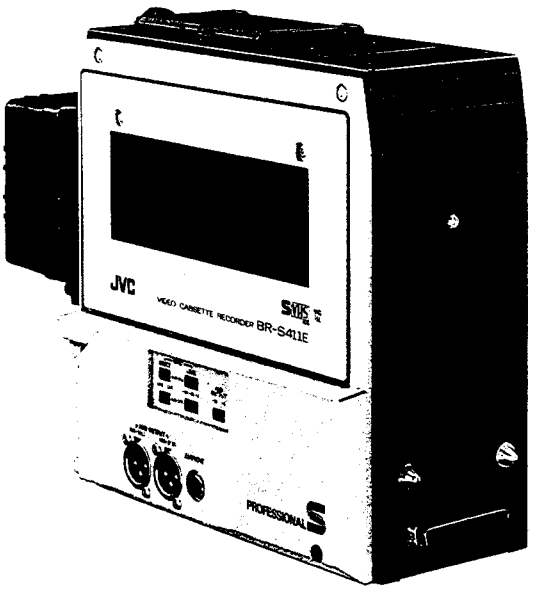
INSTRUCTIONS

JVC

BR-S411E

VIDEO CASSETTE RECORDER
MAGNETOSCOPE A CASSETTE
VIDEOCASSETTENRECORDER

S-VHS 625 VHS PAL Hi-Fi HQ High Quality



PGD3000-2-160

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This unit should be used with 12 V DC only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE:
The rating plate (serial number plate) is on the rear of the unit.

CAUTION

To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qaulified service personnel.

This equipment has been produced to comply with Directive number 82/499/EEC.

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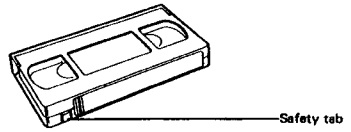
PRECAUTIONS

Handling and storage

- Avoid using the recorder under the following conditions:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibrations, and
  - poorly ventilated places.
- Be careful of moisture condensation.
  Avoid using the recorder immediately after moving it from a cold place to a warm place or soon after heating a room which was cold. The water vapor in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.

Video cassettes

- This recorder employs S-VHS and VHS cassettes only.
  S-VHS: SE-180 for 180 minutes, SE-120 for 120 minutes. and SE-60 for 60 minutes of recording.
  VHS: E-240 for 240 minutes, E-180 for 180 minutes, E-120 for 120 minutes, E-60 for 60 minutes, and E-30 for 30 minutes of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording can not be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

FEATURES

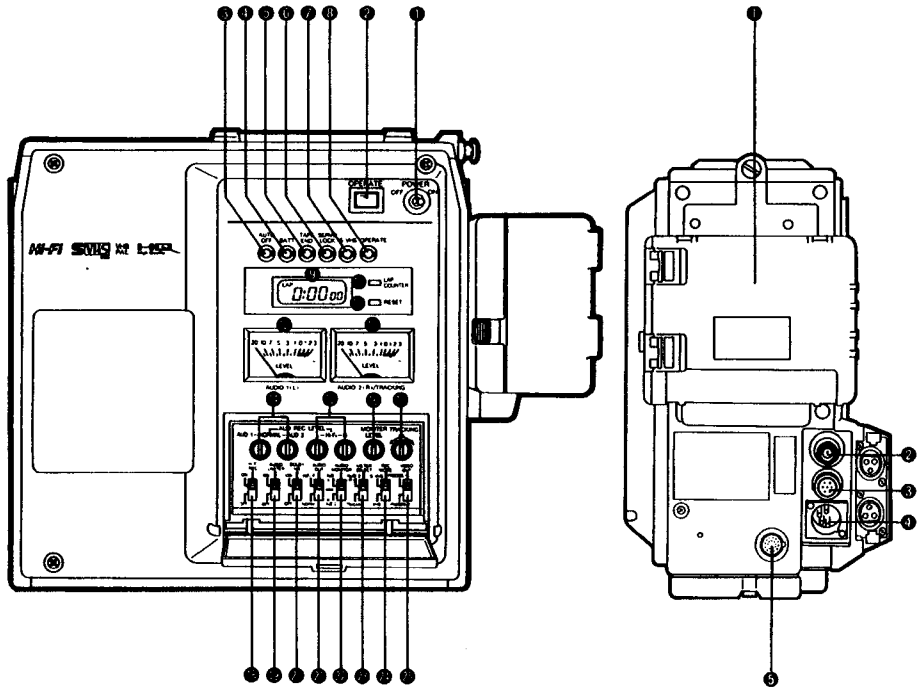
More than 400 lines of horizontal resolution
Conforming to the S-VHS format, the BR-S411E offers a picture with well over 400 lines of horizontal resolution which renders dramatic improvements in detail, clarity and presence, and fully justifies use in professional applications.
As a camcorder or a portable
The BR-S411E forms a compact camcorder in combination with a specific camera, or can be used as a separate portable recorder together with an existing camera using an optional VTR adapter.
Systems flexibility
Equipped with output connectors for both the composite and separated Y/C signals*, the BR-S411E flexibly interfaces with other video equipment. High-quality software programs can be produced using the BR-S411E as the master player and a current VHS or 3/4" U-VCR editing recorder (with or without Y/C 443 connectors), together with an optionally available editing controller. S-VHS editing recorders will further enhance and simplify editing.
Rotary Erase Head
A rotary erase head ensures distortion-free assembled edits by reducing chroma beats.

- VITC (vertical interval time code) recording capability with SA-R100E Time Code Generator (optional).
- HQ (High Quality) circuitry incorporated for operation in the VHS PAL mode.
- Rugged construction using aluminum diecast body.
- Shuttle search function.
- Audio level meters and LCD electronic counter.
- Independent inputs for Hi-Fi and normal audio.
- Hi-Fi audio recording can be defeated.
- Four audio recording level controls, allowing control of both Hi-Fi and normal audio for each channel.
- XLR input and output.
- Dolby** noise reduction system for normal audio.
- Switchable between VHS and S-VHS modes (SP mode only).
- Long pause/still mechanism.
- Comprehensive warning system.

*A Y/C filtering technique incorporated under license from Faroudja Laboratories Inc.
** Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. Dolby and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

CONTROLS, INDICATORS AND CONNECTORS

REAR PANEL/BATTERY SIDE



REAR PANEL

❶ POWER switch
Set to ON to turn the power on; the tape counter will be illuminated in the Lap Time mode. When used in combination with a camera or a simple editing control unit, the power is also supplied to the camera or the control unit with this switch set to ON.

❷ OPERATE switch
To make the recorder operative, press this OPERATE switch while the power is on. The OPERATE LED indicator will light. Press again to switch it off.

INDICATOR SECTION

❸ AUTO OFF indicator
This indicator lights when the capstan, drum and reel motors cease to rotate; the recorder enters the Stop mode automatically. When moisture condenses inside the recorder, this LED blinks rapidly and the recorder enters the Stop mode automatically. Refer to the chart on page 7.

❹ BATT indicator
This indicator blinks when the battery power drops to a level that needs recharging, and remains lit when the battery becomes completely depleted. Refer to the chart on page 7.

❺ TAPE END indicator
Starts blinking shortly before the tape end, and remains lit when the tape comes to an end. This blinking time span differs slightly depending on the tape length of the cassette used. Refer to the chart on page 7.

❻ SERVO LOCK indicator
Remains off while the drum and capstan servos are locked. When the servos are out of their lock ranges or when there is no input signal during recording, the indicator blinks at intervals of 1/4 second. During playback, it is always off. Refer to the chart on page 7.

❼ S-VHS mode indicator
Lights during recording in the S-VHS MODE (selected with the REC MODE switch) and during playback in the S-VHS mode (selected through automatic detection).

❽ OPERATE indicator
Lights when the OPERATE switch is pressed while the power is on.

❾ Tape counter
Switchable between tape counter (from "0000" to "9999") and lap timer. In the Lap Timer mode, "LAP" appears at the left-hand corner of the display and a 5-digit display shows the amount of tape that has run, in hours, minutes and seconds.

❿ LAP/COUNTER button
To switch the display between lap timer and tape counter.

⓫ RESET button
To reset the tape counter to "0000" or the lap timer to "0:00.00".

⓬ AUDIO-1(L) LEVEL meter
Shows the normal audio-1 or Hi-Fi left-channel level during recording and playback. Switching between normal and Hi-Fi audio is performed with the AUDIO OUT select switch.

⓭ AUDIO-2(R) LEVEL/TRACKING meter
Shows the normal audio-2 or Hi-Fi right-channel level during recording and playback when the METER SELECT switch is set to AUD-2(R). Switching between normal and Hi-Fi audio is performed with the AUDIO OUT select switch. When the METER SELECT switch is set to TRACKING, this shows the tracking during playback.

SUB CONTROLS

⓮ AUD REC LEVEL NORMAL AUD-1/AUD-2 controls
To adjust the normal audio recording level for audio-1 and audio-2 manually, referring to the audio level meters.

⓯ AUD REC LEVEL Hi-Fi L/R controls
To adjust the Hi-Fi audio recording level for left channel and right channel manually.

⓰ MONITOR LEVEL control
Turn to adjust the earphone output level.

⓱ TRACKING control
Noise bars may be seen or breaks in the Hi-Fi sound may be heard, when playing back a tape that was recorded with a different recorder. To correct this, turn the TRACKING control so that the needle of the TRACKING meter makes its maximum deflection.

⓲ Hi-Fi REC switch
ON: To record sound on the Hi-Fi audio track.
OFF: To defeat the recording of sound on the Hi-Fi audio track.

⓳ AUDIO LIMITER switch
Set to ON to activate the limiter circuit for the normal audio. The limiter circuit is switched on or off simultaneously for the audio-1 and audio-2 channels. Manual level control is possible even when the limiter circuit is switched on.

⓴ DOLBY NR switch
Set to ON to activate the noise reduction circuit for the normal audio track. To play back a tape which was recorded with the DOLBY NR switch set to ON, be sure to set the DOLBY NR switch to ON.

㉑ AUDIO OUT select switch
Selects the audio signal to be output from the AUDIO OUT connectors, earphone jack or checked on the audio level meters.
Hi-Fi: To check the Hi-Fi audio signals.
NORM: To check the normal audio signals.

㉒ AUDIO MONITOR switch
Selects the audio signal to be output via the earphone jack.
AUD-1 (L): To monitor the audio signal on audio-1 or the left channel.
MIX: To monitor the mixed sound of audio-1 (L) and audio-2 (R).
AUD-2 (R): To monitor the audio signal on audio-2 or the right channel.

㉓ METER SELECT switch
Selects the function of the AUDIO-2 (R)/TRACKING meter.
AUDIO-2 (R): To show the audio level of normal audio-2 or Hi-Fi audio right channel.
TRACKING: To show the playback FM signal level.

㉔ REC MODE switch
Selects the recording mode of the video signal.
S-VHS: To record in the S-VHS mode using S-VHS tape.
VHS: To record in the VHS mode.

㉕ VIDEO OUT select switch
PROCESS-1: Normally set to this position.
PROCESS-2: In this position, the playback pictures are slightly affected by noise, but the recorded pictures have better detial. Use this position when using the BR-S411E as a feeder in editing.

BATTERY SIDE

❶ Battery holder
Insert an exclusive battery pack (NB-G1U) into this holder.

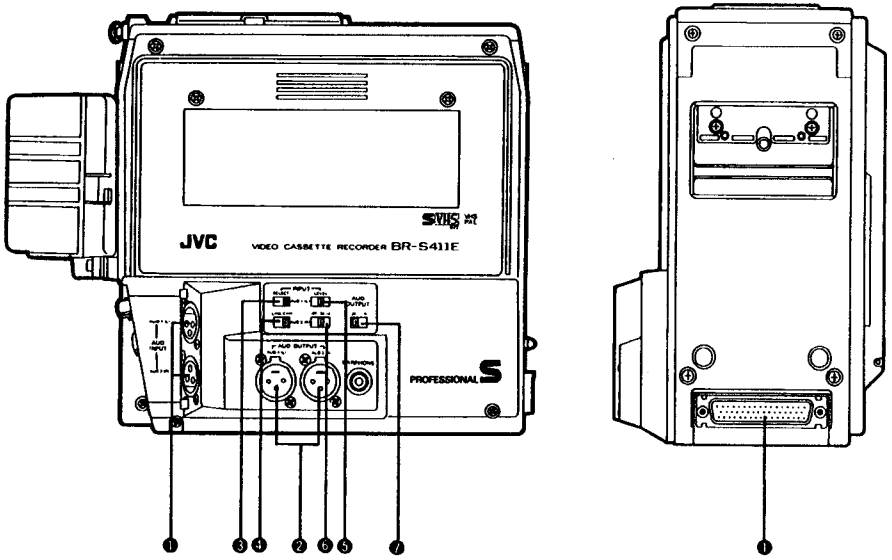
❷ VIDEO OUT connector (BNC)
Line output connector for composite video signal.

❸ Y/C 443 output connector (7-pin)
To deliver Y/C 443 video signals (separated luminance and chroma signals).

❹ DC IN 12 V connector
Connect the AA-G10E battery charger/power adapter (optional) for AC operation.

❺ TIME CODE connector (10-pin)
Connect the SA-R100E Time Code Generator (optionally available) when you wish to record the VITC (vertical interval time code).

FRONT PANEL/CAMERA CONNECTOR SIDE



FRONT PANEL

❶ AUDIO INPUT connectors (AUD-1/L, AUD-2/R)
Audio input connectors for Normal and Hi-Fi audio when the AUDIO INPUT SELECT switch ❽ or ❾ is set to LINE for each channel.

❷ AUDIO OUTPUT connectors (AUD-1/L, AUD-2/R)
The audio signal (Hi-Fi or Normal) selected with the AUDIO OUT select switch ❽ on the rear panel is output via these connectors.

❸ AUD-1 (L) INPUT select switch
Selects the input signal (camera or Line AUD-1/L of AUDIO IN connector ❶) to be recorded.

❹ AUD-2 (R) INPUT select switch
Selects the input signal (camera or Line AUD-2/R of AUDIO IN connector ❶) to be recorded.

❺ AUD-1 (L) INPUT level select switch
Select -60 dB, -20 dB or +4 dB according to the level of the AUD-1/L input signal.

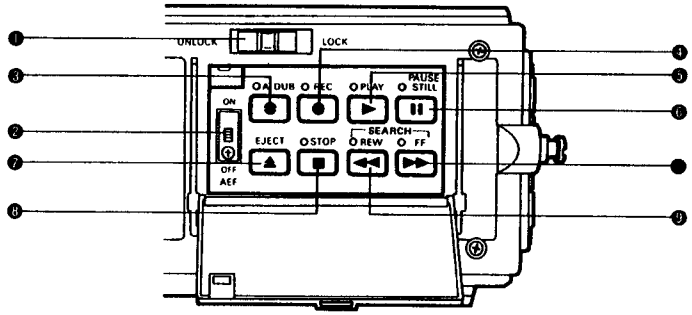
❻ AUD-2 (R) INPUT level select switch
Select -60 dB, -20 dB or +4 dB according to the level of the AUD-2/R input signal.
Note: -60 dB: Audio recording from microphone.
-20/+4 dB: Audio recording from VTR or other audio equipment.

❼ AUDIO OUTPUT level select switch
Select -20 dB or -6 dB according to the level of the audio output signal. The level is switched for both Left/Right audio channels simultaneously.

CAMERA CONNECTOR SIDE

❺ Camera connector (50-pin)
Connect a video camera equipped with a 50-pin VTR docking connector.

TOP PANEL



❶ UNLOCK/LOCK slide knob
Slide to UNLOCK to open the control panel cover. Leave it in the LOCK position in normal shooting operation.

❷ AEF ON/OFF switch
Normally set this switch to ON. To re-set to OFF, loosen the screw and remove the stopper plate. In the OFF position, the preroll function is switched off for prompt response in recording, though the picture at the switching point between pause and restart is distorted.

❸ A DUB button
To start audio dubbing, press the PLAY button while holding the A DUB button depressed. The A DUB and PLAY LED indicators will light and the sound on the normal audio-2 track will be replaced by new material.

❹ REC button
To start recording (video and audio), press this button together with the PLAY button. To stop recording, press the STOP button. When the REC button is pressed together with PAUSE/STILL button, the tape is rewound for 1-3 seconds and stops in the Record-Pause mode (Recording Standby mode). Recording starts by pressing the camera's trigger.

❺ PLAY button
Press to start playback. Press together with the REC button for recording, and with the A DUB button for audio dubbing.

❻ PAUSE/STILL button
Press to stop the tape temporarily during recording or playback. The PAUSE/STILL LED indicator will light. When this button is pressed during recording, the tape is rewound for 1.3 seconds and stops in the Record-Pause mode (when AEF mode is on). When the PLAY button is pressed, or triggered by the camera's start/stop button, the tape starts running and recording starts at the position where the previous recording stopped. When this button is pressed during playback, a still picture is obtained. For frame advance, press it repeatedly. To resume normal playback, press the PLAY button.

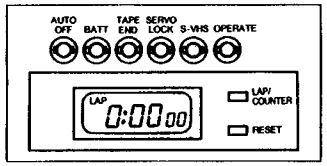
❼ EJECT button
Press to lift the cassette housing. Functions only in the Stop mode. To eject the cassette in any other mode, first press the STOP button, then the EJECT button.

❽ STOP button
Press to stop the tape. When this button is pressed while the tape is running, the LED indicator lights and the tape is completely withdrawn into the cassette. This state is referred to as the Stop mode.

❾ REW button
When the button is pressed in the Stop mode, the REW LED indicator will light.
Pressing this button in the Play on Still mode enables high-speed playback at about 9 times normal in the reverse direction. During search the REW indicator will remain lit.

● FF button
When the button is pressed in the Stop mode, the FF LED indicator will light.
Pressing this button in the Play on Still mode enables high-speed playback at about 9 times normal in the forward direction. During search the FF indicator will remain lit.

COMPREHENSIVE WARNING SYSTEM



To ensure trouble-free operation and quality recordings, the BR-S411E has a comprehensive array of warning indicators. When any of the warning indicators lights or flashes, beeps can be heard in the output sound from the EARPHONE jack. With some cameras, their tally lamps are controlled by the same warning signal and present identical indications. The following chart summarizes the facts relating to the warning system.

Indication symbols:

- ○ : The LED remains lit.
- ◓ : The LED flashes at intervals of 1 second.
- ◔ : The LED flashes at intervals of 1/4 second.
- ∿∿∿∿∿ : Continuous warning tone is heard.
- ∿ ∿ : Intermittent beep, 1-second intervals.
- ∿ ∿ ∿ : Intermittent beep, 1/4-second intervals.

LED indicator	Indication Mode REC	Indication Mode PLAY	Alarm sound[1] in the earphone REC	VCR operation Mode REC	VCR operation Mode PLAY	Tally indication on camera BATTERY	Tally indication on camera REC	Remarks
SERVO LOCK	◔	–	∿ ∿ ∿ ∿	Continues	–	–	◔	Out of lock.
TAPE END	◓	–	∿∿ ∿∿	Continues	–	–	◓	About 2 minutes before the end of the tape.
	○	○	∿∿∿∿∿∿	Stops	Stops	–	–	Tape end.
AUTO OFF	◔	◔	∿∿∿∿∿∿	Operate OFF	Operate OFF	–	–	Capstan, drum or reel motors stop.
	○	○	∿ ∿ ∿ ∿	Stops	Stops	–	–	Condensation.[2]
BATT	◓	◓	∿∿ ∿∿	Continues	Continues	◓	◓	Slightly before the battery is depleted.
	○	○	∿∿∿∿∿∿	REC LOCK	Operate OFF	○	–	Battery depleted.

1) The alarm sound is superimposed on the audio output from the EARPHONE jack.
Priority of earphone output: ∿∿∿∿ > ∿ ∿ ∿ > ∿∿ ∿∿ ∿∿

2) If the AUTO OFF state due to condensation occurs, dry inside the recorder.

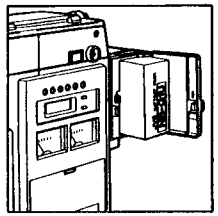
POWER SUPPLY

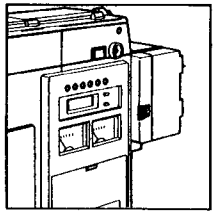
Power can be supplied in two ways as required.
1. Using the NB-G1U battery pack (provided).
2. Using the AA-G10E AC power adapter/battery charger (optional)

USING THE NB-G1U BATTERY PACK

1. Make sure that the POWER switch of the BR-S411E is OFF.
2. Slide the battery compartment door latch of the battery holder to the right and open the door.
3. Insert the NB-G1U battery pack into the battery holder with its printed label to the left.
4. Close the door of the battery holder.

- To remove the battery pack, open the battery compartment door and press the battery release button. The battery pack will be released. Withdraw the battery pack.
- Read the instructions on the battery pack carefully.

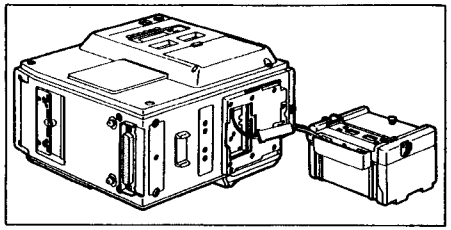




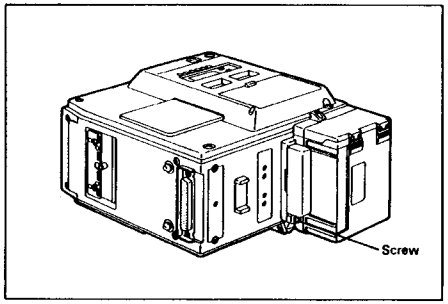
USING TWO NB-G1U BATTERY PACKS WITH AN OPTIONAL BATTERY HOLDER

When the BR-S411E is used in a camcorder configuration, one battery pack can be installed inside the provided battery holder and the other can be attached externally using an optional battery holder. Both battery packs operate in parallel to prolong the recording time.

1. Open the cover of the DC connector pocket and pull out the DC connector. Combine this connector with the DC connector of the battery holder. Then store these connectors into the pocket.



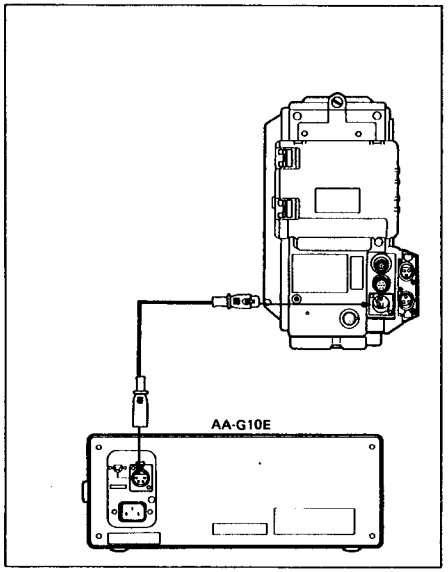
2. Mount the battery holder onto the BR-S411E and secure with the screws. Insert a battery pack into the battery holder.



USING THE AA-G10E BATTERY CHARGER/ AC POWER ADAPTER

1. Connect the DC OUT connector of the AA-G10E to the DC IN connector of the BR-S411E using the DC cord provided with the AA-G10E.
2. Connect the power cord to the AA-G10E and plug it into an AC outlet.
3. Press the VCR button on the front panel of the AA-G10E.
4. Press the POWER button of the AA-G10E to ON.

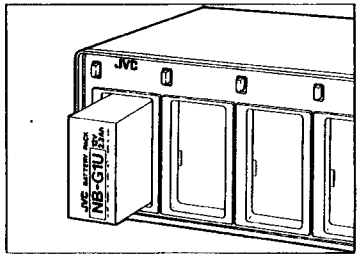
- If the battery pack remains inside the battery holder, its power is consumed even when the AA-G10E powers the recorder. Be sure to remove the battery pack during AC operation.
- For more details refer to the instruction manual of the AA-G10E.



RECHARGING THE NB-G1U BATTERY PACK

To charge the battery pack, use the exclusive AA-G10E adapter/battery charger (AC power). No other charger, including JVC's other models, can be used to charge the NB-G1U battery pack.
The AA-G10E can charge 4 battery packs at a time. Two different charging modes are available; normal charging and quick charging. In normal charging, 4 battery packs are charged in parallel and charging is completed in about 10 hours. In quick charging, charging is performed one battery at a time, taking about 90 minutes per battery pack. After the 4 battery packs have been charged in sequence, they are charged together in the normal charging mode for one hour.

1. Insert a battery pack into each compartment of the AA-G10E, contacts first and with the printed side to the left, until it locks into place.
2. Press the POWER button of the AA-G10E to ON.
3. Press either the QUICK CHARGE or NORMAL CHARGE button depending on the charging mode you select.

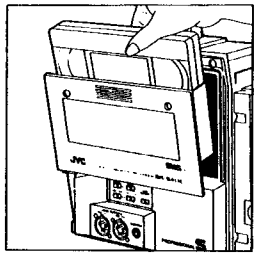


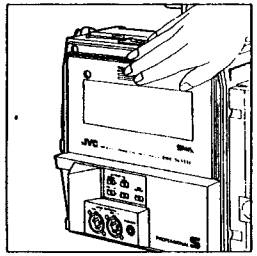
- If the BR-S411E is connected to the AA-G10E, make sure that its POWER button is OFF.
- For more details about charging, refer to the instruction manual for the AA-G10E.

LOADING AND UNLOADING A CASSETTE

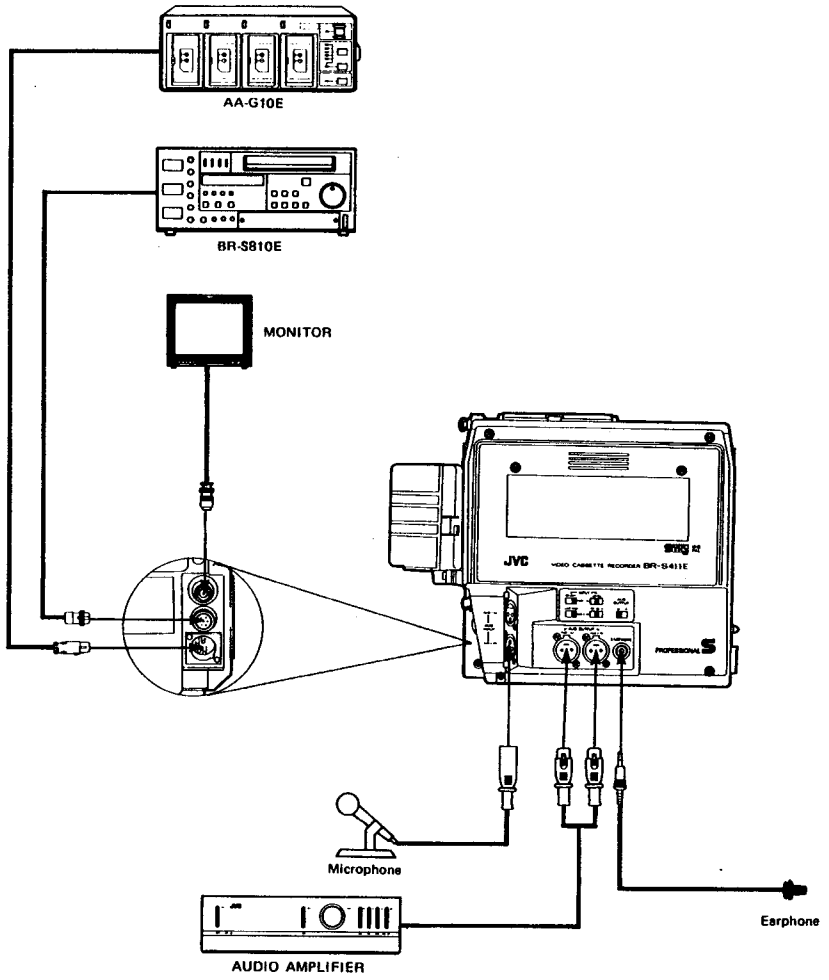
- Set the POWER button to ON and press the OPERATE button before inserting a cassette. If the AUTO OFF indicator should flash, do not insert a cassette, but put the machine in a dry place and wait until the indicator goes off.
- Before inserting a cassette, check to see if there is any tape slack.
- To remove the cassette, the power should be on, otherwise the tape is not unloaded.
- If a cassette is loaded near the end of the tape, tape loading may not be performed and the TAPE END indicator will remain lighted. If you wish to record onto the last few minutes of tape, remove the cassette and rewind the tape slightly by hand or with a tape winder.
- If the EJECT button does not function when the power is off, first switch on the power, then press the EJECT button.

1. Press the EJECT button, and the cassette housing will open gently. Insert a cassette correctly so that the groove of the cassette is in line with the cassette guide of the cassette housing.
2. Press the housing cover down by hand at the top edge. The STOP LED will light.

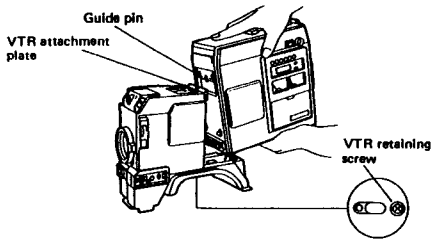




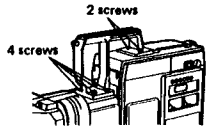
CONNECTIONS



ATTACHING A CAMERA



1. Remove the red cap from the camera connector.
2. Attach the camera to the BR-S411E by aligning the portions which engage.
3. Attach the camcorder carrying handle.



RECORDING

RECORDING PROCEDURE

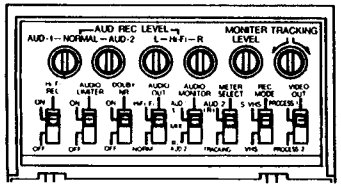
1. Set the POWER switch to ON.
2. Press the OPERATE button.
   - In the camcorder configuration, use the OPERATE switch on the camera (set it to ON). Power will be supplied to both the BR-S411E and the camera.
3. Slide the UNLOCK/LOCK knob to UNLOCK and open the control panel cover.
4. Press the EJECT button to open the cassette housing, and insert a cassette.
5. Press the REC and PLAY buttons to start recording.
   - When using a camera, this engages the Record-Pause mode and actual recording will be started by the camera's trigger.
6. To stop recording temporarily, press the PAUSE/STILL button. To re-start recording, press the PLAY button.
   - When using a camera, tape start/stop will be controlled by the camera's trigger. When the camera's power is turned off, the recorder enters the Record-Lock mode so that it can enter the Record-Pause mode when the power is reapplied to the camera.
   - Do not stop recording with the STOP button, otherwise the AEF mechanism will not function. (For the AEF mechanism, refer to page 12.)

Notes:
- Even if the recording mode is switched from VHS to S-VHS during recording in the VHS mode with a VHS cassette loaded, the mode will not change, but VHS recording will continue with the S-VHS mode indicator blinking.
- When using a camera, if recording is started immediately after the camera is switched from the power save mode to the standby mode, the picture will be distroted until the servo system locks. Before starting, allow for longer than 6 seconds after the camera is engaged in the standby mode.

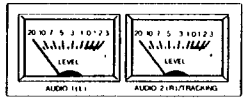
AUDIO LEVEL ADJUSTMENT

The audio recording level can be adjusted independently for Hi-Fi L, Hi-Fi R, normal audio-1 and audio-2 channels.

1. Hi-Fi audio recording level adjustment
   Set the Hi-Fi REC select switch to ON and set the AUDIO OUT switch to Hi-Fi to switch the audio level meters to the Hi-Fi level mode. Turn the AUD REC LEVEL Hi-Fi L or R control unit the corresponding audio meter deflects to "0" with the highest level input signal.



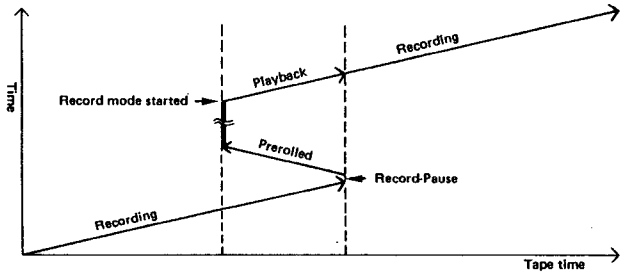
2. Normal audio recording level adjustment
   Set the AUDIO OUT switch to NORM to switch the audio level meters to the normal audio level mode. Turn the AUD REC LEVEL NORMAL AUD-1 or AUD-2 control until the corresponding audio meter deflects to "0" with the highest level input signal.



Notes:
- When monitoring the sound with an earphone, the earphone output can be switched among audio-1(L), audio-2(R) and a mixture of the two with the AUDIO MONITOR select switch.
- It is recommended, especially in live recording, that the AUDIO LIMITER switch be set to ON to avoid overlevel recording.
- Set the DOLBY NR switch as required.

AUTOMATIC EDITING FUNCTION

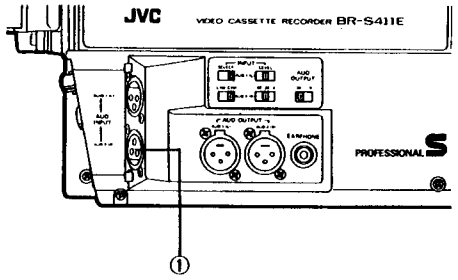
The AEF mechanism helps prevent picture distortion at edit points in assemble recording. When the PAUSE/STILL button is pressed during recording, the tape is rewound by about 1.3 seconds of program time and stops in the Record-Pause mode. When recording is re-started by pressing the PLAY button, recording does not take place for the first 1.3-second period, during which tape running is stabilized for smooth transition to the next edit.

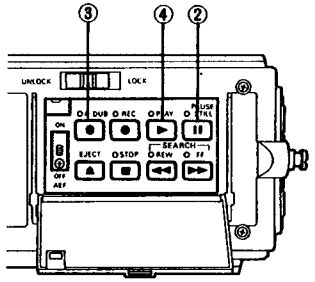


Notes:
- If recording is re-started from the Stop mode, rainbow noise will be introduced at the transition between the previous and new recordings because of overlapped recording.
- Do not move the unit violently in the Record-Pause mode, otherwise frames may be missed.

AUDIO DUBBING

The BR-S411E has an audio dubbing function which enables the normal audio-2 soundtrack to be replaced with new material.

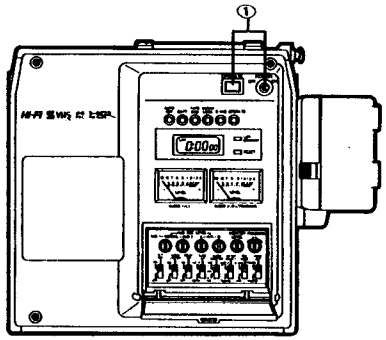


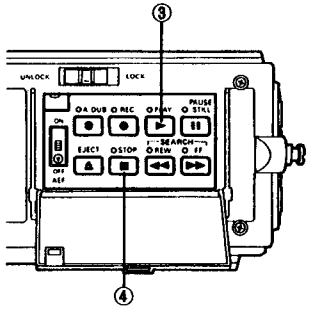


①Connect a sound source to the MIC AUD-2(R) jack or the AUDIO IN AUD-2(R) connector. Adjust the recording level.
②Play back the tape and press the PAUSE/STILL button at the position from which you want to start audio dubbing.
③Press the PAUSE/STILL button while holding the A DUB button depressed.
④Press the PLAY button to start audio dubbing. Press the PAUSE/STILL button to stop audio dubbing temporarily. To end audio dubbing, press the STOP button.

PLAYBACK

PLAYBACK PROCEDURE





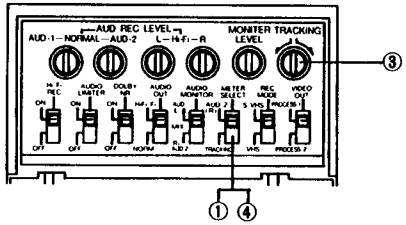
①Set the POWER switch to ON and press the OPERATE button.
②Insert a recorded cassette correctly.
③Press the PLAY button to start playback.
④Press the STOP button to stop playback.

Note:
- If excessive noise bars appear or the pictures look grainy, adjust the TRACKING control.

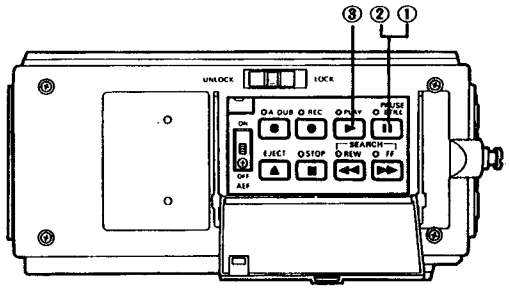
TRACKING ADJUSTMENT

①Set the METER SELECT switch to TRACKING.
②Play back the tape.
③While referring to the AUDIO-2(R)/TRACKING meter, turn the TRACKING control slowly so that the meter makes the maximum deflection to the right.
- Normally set the TRACKING control to its center position.

④After completion of tracking adjustment, re-set the METER SELECT switch to AUD-2(R) so that the meter will function as an audio level meter.



STILL AND FRAME ADVANCE



①Press the PAUSE/STILL button during playback to view a still picture.
②To advance the still picture, press the button again.
- Holding the PAUSE/STILL button depressed will continuously advance the still picture one frame at a time to give a slow-motion effect.
  This function is not available with the remote control unit's (optional) PAUSE button.

③To resume normal playback, press the PLAY button.

Notes:
- To protect the tape and video heads, the tape is automatically fed for several frames if the Still mode continues for about 3 minutes and then again after another 3 minutes. If the Still mode continues for about 9 minutes, the Stop mode will be engaged automatically.
- Still pictures may contain some noise or vibrate vertically. This is not due to any defect of the unit.
- The FRAME ADVANCE mode cannot be engaged by the remote control unit (optional).

SHUTTLE SEARCH & REW/FF

When the REW or FF button is pressed in the stop mode, normal rewind or fast forward takes place. When these buttons are pressed in the Play or Still mode, the tape runs at about 9 times normal speed in the corresponding direction. The buttons can be locked and the indicator lights. You can follow the speed-up picture on the monitor screen.

SPECIFICATIONS

GENERAL

Format	: VHS/S-VHS Europe standard
Video signal system	: PAL-type colour signal/ PAL-type Y/C signal
Tape speed	: 23.39 mm/sec
Recording time	: 180 min. with JVC SE-180 or E-180
Power requirement	: DC 12 V
Power consumption	: 16 watts
Dimensions	: 297(W) x 240(H) x 137(D) mm
Weight	: 4.0 kg (without accessories)
Operating temperature	: 0°C to 40°C, Non-water proof
Storage temperature	: –20°C to 50°C

VIDEO

Recording and Playback system	: Rotary two-head helical scanning system
Luminance	: FM recording
Colour	: Phase shift, converted sub-carrier direct recording
Video output	
Line	: 1.0 Vp-p, 75 ohms, unbalanced
Y/C	: Y: 1.0 Vp-p, 75 ohms, unbalanced : C: 0.3 Vp-p (Burst), 75 ohms, unbalanced
Video S/N	: More than 45 dB
Resolution	
S-VHS mode	: 400 lines
VHS mode	: 250 lines

AUDIO

AUDIO INPUT	: –20/+4 dB, 10 k-ohms, balanced, XLR
(Microphone)	: –60 dB, 3 k-ohms, balanced, XLR
Line output	: –6/–20 dB, 600 ohms, balanced XLR
Earphone	: –25 to –45 dBs variable, 8 ohms load unbalanced
Frequency response	: 40 to 12,000 Hz (Normal) : 20 to 20,000 Hz (Hi-Fi)
Audio S/N (at 3 % distortion)	: 46 dB (Normal/NR-ON)/ 42 dB (Normal/NR-OFF)
Audio dynamic range	: 80 dB (Hi-Fi)
Wow and flutter	: 0.007 % WRMS (Hi-Fi)
ACCESSORIES	: Battery pack (NB-G1U) x 1, Battery holder x 1

SECTION 1
GENERAL DESCRIPTION

1.1 COMPARISON TABLE OF DIFFERENT PARTS & FUNCTION BY MODEL

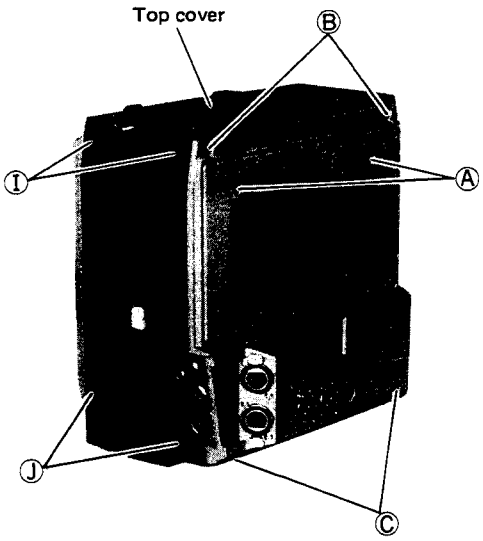
In the following table, branch numbers of parts numbers are omitted. "←" means the same as left, "X" means no installation.

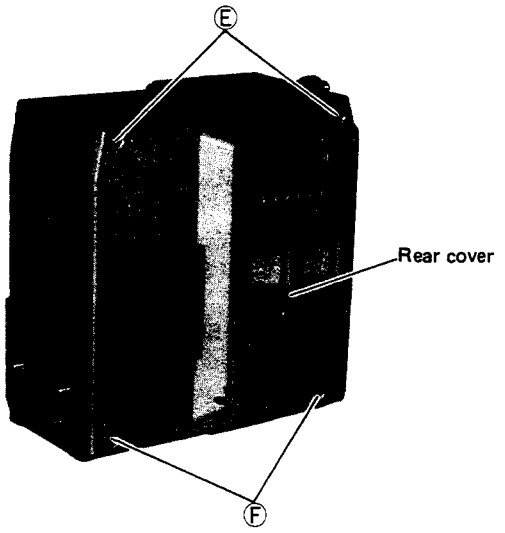
	BR-S411E	BR-S410EX	BR-S410E
Search function	○ (fixed at 9 times)	←	←
Insert editing	AUD-2 DUB.	←	←
VITC ready	○	X	←
Drum assembly	PDV2158D	← (#551)	← (#1746)
Upper Drum	PDM2140B	← (#551)	← (#1746)
A/C Head	PGZ00588	←	←
Full Erase Head	PQ40865A	←	←
Flying Erase Head	○	X	←
Capstan Motor	PGZ00665	←	←
Clutch Mechanism	PGZ01257	← (#401)	← (#1626)
TU Impedance Roller	PRD42434A	X	← (#76)
Cassette Housing	PGS20168C	PGS20168B	← (#76)
ALU circuit	○	X	←
Audio input	BALANCE	UNBALANCE	←
VIDEO PWB	PRK10008A	PGE10107A	←
COLOR PWB	PRK20032A	PGE20230A	←
SERVO PWB	PGE10096A	←	←
MDA PWB	PGE40243A	←	←
AUDIO PWB	PGE10037B	←	←
FM A SUB PWB	PRK30006A	PGE10037B	←
FM A PREAMP PWB	PGE30099B	←	←
REGULATOR PWB	PGE30158A	←	←
SYSCON PWB	PGE20209A	←	←
ERASE PWB	PGE40238A	← (#551)	← (#1746)
FE HEAD PWB	PGE40185	←	←
XLR PWB	PRK20029A	X	←
AUDIO CONNECTOR PWB	PGE40273A	X	←
SWITCH PWB	PGE30055A	←	←
VIDEO PREAMP PWB	PGE20243A	←	←
START SENSOR PWB	PGE40156A	←	←
END SENSOR PWB	PGE40157A	←	←
TU SENSOR PWB	PU56615	←	←
SUP SENSOR PWB	PU58141	←	←
DC IN PWB	PGE40120A	←	←
VIDEO OUTPUT PWB	PGE40100A	←	←
FUSE PWB	PGE40239A	←	←
MAIN SWITCH PWB	PGE40244A	←	←
OPERATION BUTTON PWB	PGE40121A	←	←
COUNTER PWB	PGZ00501A	←	←
DELAY LINE PWB	PGE20229A	←	←
COLOR SUB PWB	PGE20231A	←	←
A/V OUT PWB	X	←	PGE10097A3
ADAPTER 1 PWB	X	←	PGE10097A1
ADAPTER 2 PWB	X	←	PGE10097A2
A/C HEAD PWB	PGE40009	←	←
VITC JUNC PWB	PRK40003A	X	←
AD REC PWB	PRK30011B	X	←
VIDEO (2) PWB	PRK40007A	X	←
EARPHONE PWB	PGE40275A	X	←

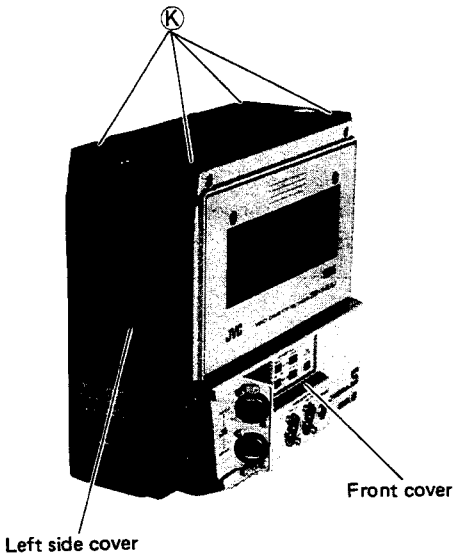
1.2 REMOVING EXTERNAL COVERS

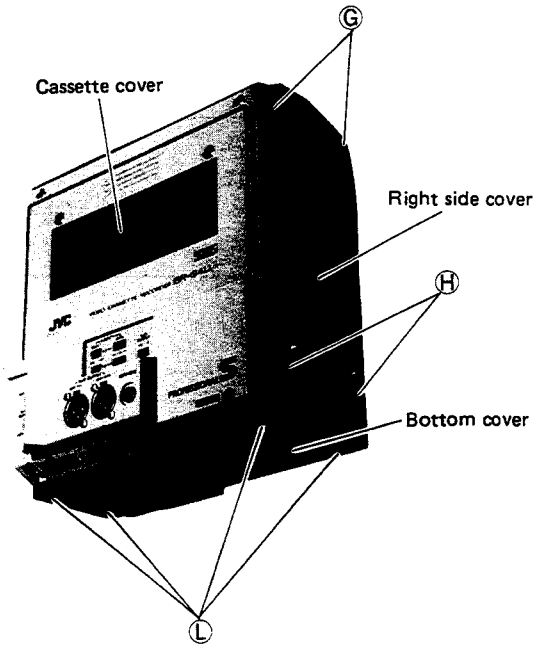
For the most part, the external covers of this model are attached together. The Table lists the screws to be removed or loosened in order to remove a specific cover.

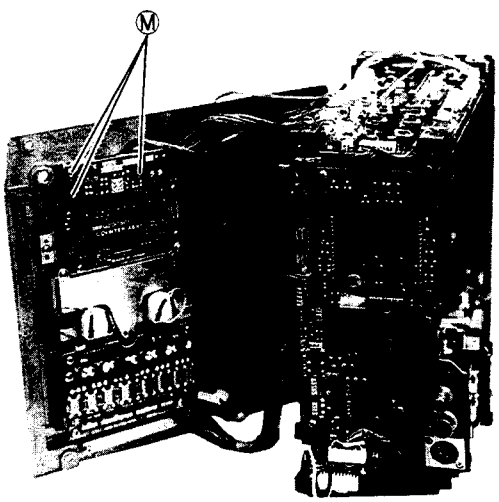
Cover	Remove Screws	Lossen Screws (about 3 turns)	Description
Front (cassette cover)	Screw Ⓐ, Ⓑ, Ⓒ Tatal 6	–	The cassette cover can be removed by taking out 2 screws Ⓐ.
Rear	Screw Ⓔ, Ⓕ, Ⓜ Total 7	–	The Operation board [2][7] is attached to the rear cover by screws Ⓜ.
Top	Screw Ⓑ, Ⓔ, Ⓖ Ⓘ, Ⓚ Total 12	Screw Ⓐ, Ⓒ, Ⓕ Total 6	Remove or loosen screws securing the front and rear covers as necessary when removing and replacing these covers. **Notes:** 1) Remove camera adapter or battery case when removing the side covers. See operation manual. 2) At the left side cover, the battery case connector is secured by binding.
Right Side	Screw Ⓑ, Ⓒ, Ⓔ, Ⓕ, remove one each from right side cover and screws Ⓓ, Ⓖ, Ⓗ Total 10	Screw Ⓑ, Ⓒ, Ⓔ, Ⓕ, loosen 1 each at left side cover and screws Ⓐ Total 6	
Left Side	Screw Ⓑ, Ⓒ, Ⓔ, Ⓕ remove one each from left side cover and screws Ⓘ, Ⓙ Total 8	Screw Ⓑ, Ⓒ, Ⓔ, Ⓕ loosen 1 each at right side cover and screws Ⓐ Total 6	
Bottom	Screw Ⓒ, Ⓕ, Ⓗ, Ⓙ, Ⓛ Total 12	Screw Ⓐ, Ⓑ, Ⓔ Total 6	Slightly open the front and rear covers (about 5 mm) when removing. Grasp the left side cover and pull it toward the left to where bottom cover can be separated from the right side cover. Also pull the bottom cover toward the left and disengage the right side cover. Then raise the bottom cover toward the right and remove it. **Note:** The battery case connector is also secured to the bottom cover by binding.


Top cover
B
I
A
J
C


E
Rear cover
F

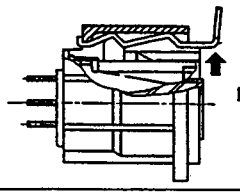

K
Front cover
Left side cover

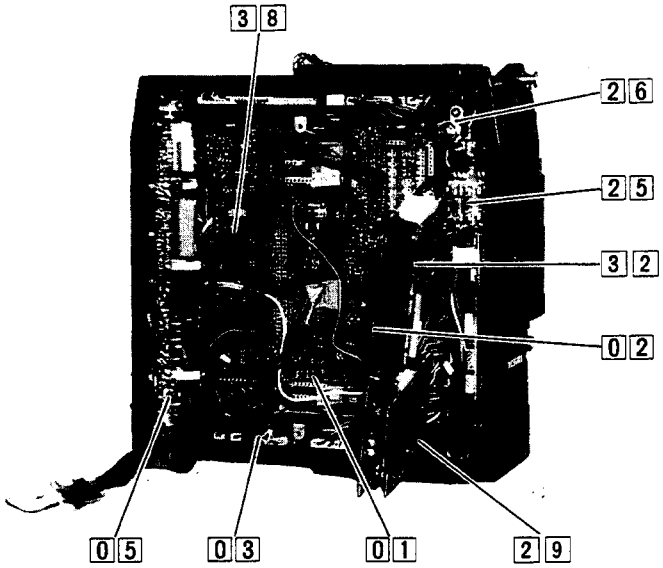

G
Cassette cover
Right side cover
H
Bottom cover
L


M

1.3 REMOVING MAIN BOARDS

Caution: Be sure to cutoff power when removing and inserting circuit boards. Also use care to return boards, connectors, etc. To their initial locations. The Table indicates locations of the main boards.

Group	Board Name	Removal
A	01 VIDEO (38 VIDEO-2 incl.) 02 COLOR (29 PB COMB, 32 COLOR SUB incl.) 05 AUDIO (05 FMA SUB incl.) 15 SWITCH 25 FUSE 26 MAIN SWITCH 27 OPERATION BUTTON	1. Remove rear cover (see Section 1.2). 2. Disengage connectors and screws securing the boards. **Notes:** 1) SWITCH board is attached to the rear cover. 2) To remove the FUSE board, take out two screws securing the MAIN SWITCH board. Press the FUSE board gently from below to disengage from the bracket. 3) The FUSE and MAIN SWITCH boards include directly soldered wires. 4) Use care regarding wire placement when removing and installing the VIDEO board.
B	09 ERASE 19 END SENSOR	1. Remove righ + cover (see Section 1.2). 2. Remove screws and nylon rivets securing the boards. 3. Disengage connectors and wires attached to the boards.
	07 REGULATOR 18 START SENSOR 36 VITC JUNC 37 ADVANCE REC	1. Remove left cover (see Section 1.2). 2. Remove screws and nylon rivets securing the boards. 3. Disengage connectors and wires attached to the boards.
C	22 DC IN 23 VIDEO OUTPUT	1. Remove cassette cover, front cover and bottom cover (see Section 1.2). 2. Take out 4 screws securing the SERVO BOARD. 3. Take out 3 screws and remove the board bracket assembly. **Note:** Connectors are soldered to boards.
D	10 FE HEAD 12 UPPER DRUM 35 A/C HEAD	1. Remove front cover (see Section 1.2). 2. Unsolder board connecting wires.
E	03 SERVO 04 MDA	1. Remove the bottom cover. Slightly pull out the SERVO board and disengage the connectors (also disconnect the MDA board connectors). Pull out the SERVO board to remove it together with the MDA board.
F	06 FM A PREAMP 16 VIDEO PREAMP	1. Remove front, right side and bottom covers (see Section 1.2).
G	08 SYSCON	1. Remove top cover (see Section 1.2). 2. Take out screws securing the board, disengage connectors, and remove the board.
H	13 XLR 14 AUDIO CONNECTOR 39 EAR PHONE	1. Remove front cover (see Section 1.2). 2. Take out screws from board or connectors. 3. Remove connectors from board. **Note:** When removing the XLR connector from the AUDIO CONNECTOR board, remove the lever indicated in the figure.  Raise the lever and pull to lemove.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02
05
03
01
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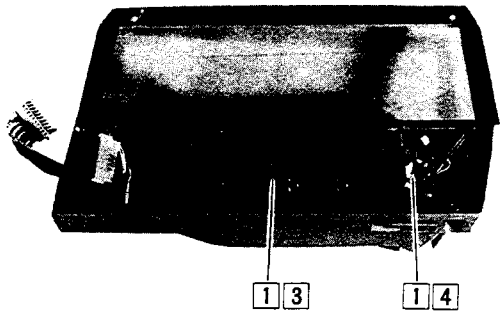
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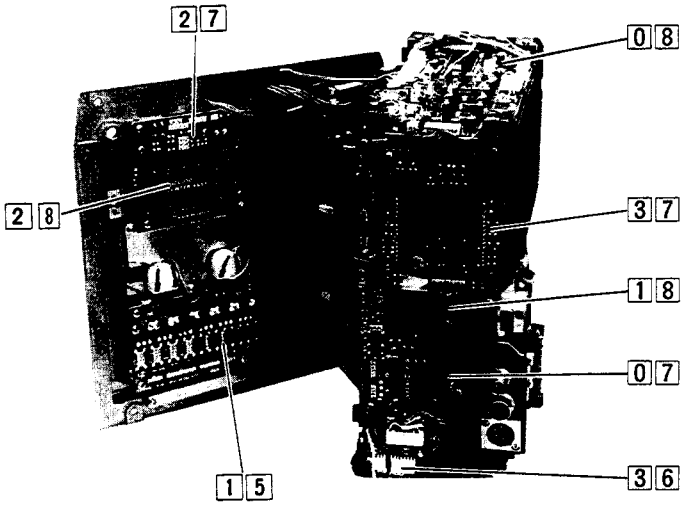
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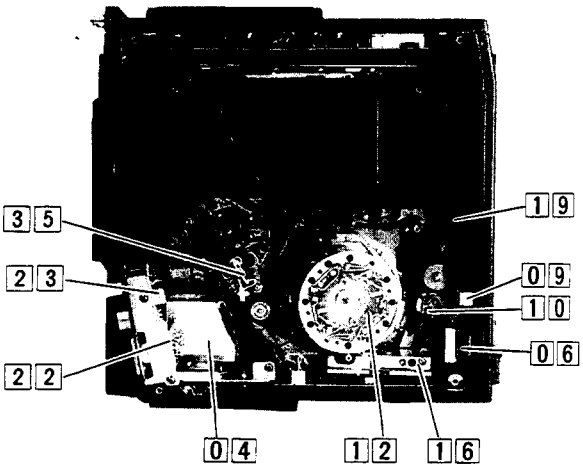
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06
04
12
16

SECTION 2
MECHANISM ADJUSTMENTS

2.1 MECHANISM ADJUSTMENTS

1. Study the manual and proceed with these adjustments only after gaining adequate understanding.
2. This set has been precisely adjusted prior to shipment from the factory. Adjust only after replacing parts and only by the method described here. Avoid disturbing other parts and adjustments.
3. Preform checks and adjustments only when the proper fixtures and test instruments are available. Use extreme care not to scratch or damage mechanical components (especially the tape transport and head drum).
4. Disengage DC IN connector and battery before replacing parts, soldering, etc.
5. Use care not to drop hardware (screws, washers, etc.) into the mechanism. Be sure to retrieve any such parts before returning the set to operation.
6. Note that mechanical and electrical adjustments are interrelated. Perform mechanism adjustments with particular care, since in many cases, they form the bases for the ensuing electrical adjustments.
7. To operate the Play mode without tape, cover the cassette LED and press the PLAY button. When the drum begins rotating, slowly turn the supply reel disk by hand.
   Note: Use care since start and end sensors may misoperate due to external light.
8. Be sure to clean the tape transport system after completing checks and adjustments. Periodic inspection is also recommended for maintaining top condition and avoiding damage to important tapes.

2.2 TOOLS AND FIXTURES

1. The following tools and fixtures are required for performing mechanism adjustments. Attempts to adjust without them would entail a long period of trial-and-error, which still would not yield the required precision and performance.
   Note: Also be sure to procure the test instruments and fixtures needed for electrical system adjustments. See Section 3.
2. In addition to special tools, the following test instruments and tools are required.
   - Color TV/monitor
   - Hexagonal (metric Allen) wrenches: for 2 mm (0.9 mm), 2.6 mm (1.27 mm), 3 mm (1.5 mm)
   - Oscilloscope (wide-band, dual-trace)
   - Spare recording tape (T-120)
   - Spare tape for transport checks (T-120)
   - Set of metric screwdrivers
   - Other standard electronics tools (metric where available)

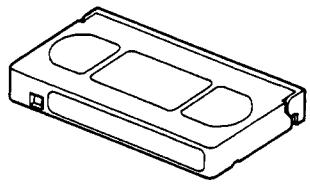
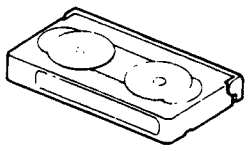
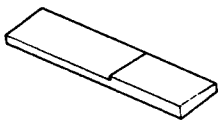
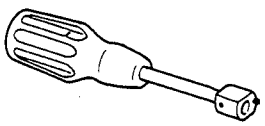
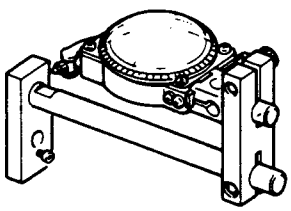
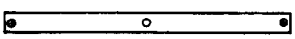
Alignment tape MHPE, MH-F8	Cassette torque meter PUJ42881	Parallel check plate PUJ50204	A/C head positioning tool PUJ47351-2
			
Micro-checker PUJ49712-2	**Micro-checker attachment PGJ04006**		
			

Fig. 2-1 Special fixtures and tools

2.3 MAIN PARTS LOCATIONS

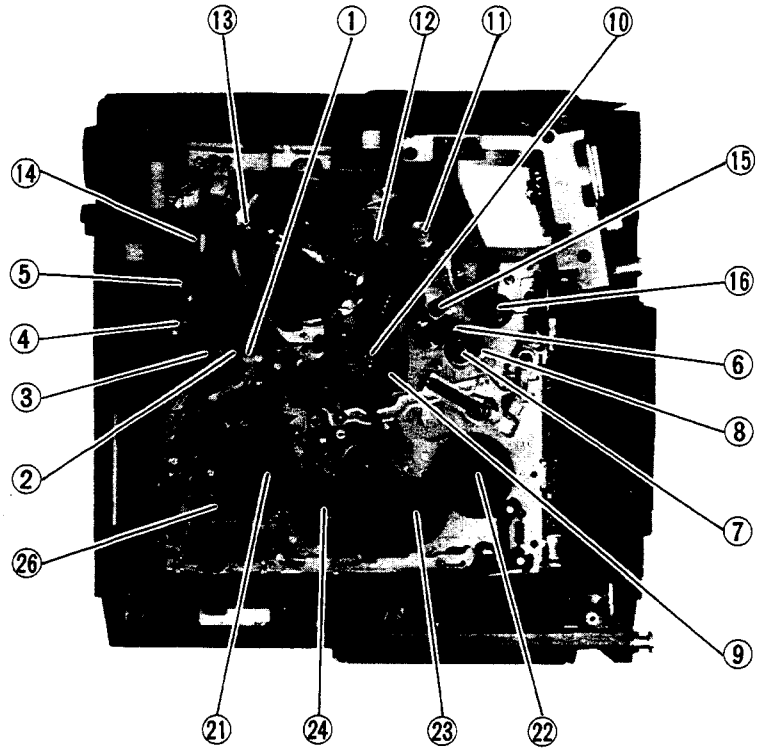


Fig. 2-2 Top view of deck

1. Tension pole
2. Supply slanted pole
3. Supply guide roller
4. Tension roller
5. Impedance roller
6. Take-up guide pole
7. Capstan
8. Take-up guide assembly
9. Take-up guide roller
10. Take-up slanted pole
11. Take-up Impedance roller
12. Lower drum assembly
13. Upper drum assembly
14. Full erase head
15. A/C head
16. Pinch roller
17. Capstan motor
18. Reel belt
19. Mode control motor
20. Belt
21. Supply reel disk
22. Take-up reel disk
23. Take-up clutch
24. Supply clutch
25. Brush
26. Tension band
27. Pick-up head

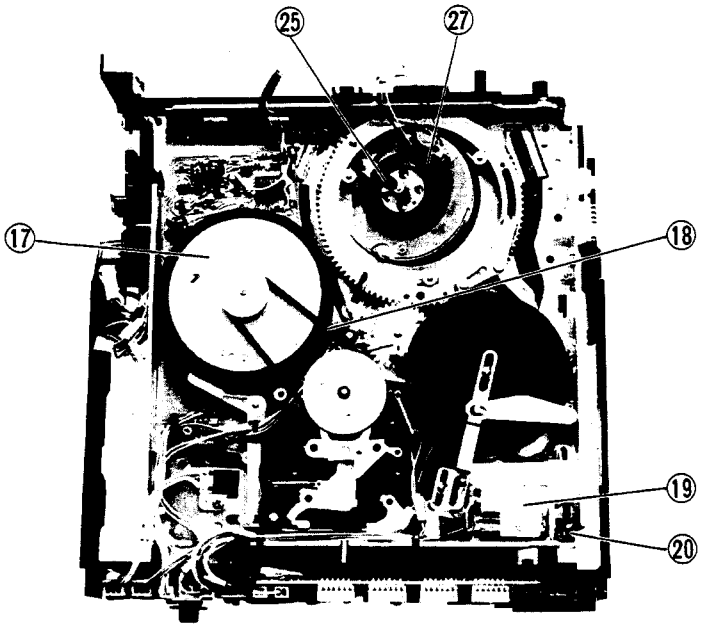


Fig. 2-3 Bottom view of deck

2.4 MAIN PARTS REPLACEMENT TABLE

Periodic inspection and maintenance are needed in order to ensure performance and reliability. The following table has been compiled simply to give a general idea regarding maintenance and inspection. In practice, the periods indicated will vary widely according to environmental and usage conditions. Also be aware that rubber parts may deform and age even when the equipment is not used. The upper drum life is particularly affected by environmental and usage conditions.

No.	Parts Name	Parts No.	Periodic servicing schedule (operating hours)										Ref. sect.	Remarks
			500	1000	1500	2000	2500	3000	3500	4000	4500	5000		
Tape transport system														
1	Tension pole ass'y	PRD42146A	★	★	★	★	★	★	★	★	★	★		Perform cleaning with finely woven cloth or gauze moistened in alcohol. Confirm that the cleaned locations are thoroughly dry before operating the deck. For lubrication, use sewing machine oil or good quality spindle oil. After cleaning with alcohol, apply 1 or 2 drops of oil.
2	Supply slanted pole	Ass'y No. PRD42474A-01												
3	Supply guide roller													
4	Guide roller	PRD42131												
5	Impedance roller	PRD42129												
6	Take-up guide pole	PU53629-2												
7	Capstan shaft	–												
8	Take-up guide ass'y	PQ40993B												
9	Take-up guide roller	Ass'y No. PRD42473A-01												
10	Take-up slanted pole													
11	Take-up impedance roller	PRD42434A-01												
12	Lower drum ass'y	PDM2078D	★	★	★	★	★	★	★	●	★	★	2.5.3	
13	Upper drum ass'y	PDM2140B	○	●	○	●	○	●	○	●	○	●	2.5.2	
14	Full erase head	PQ40865A	★	★	★	★	★	★	★	★	★	●	2.5.7	
15	A/C head	PGZ00588	★	★	★	●	★	★	★	●	★	★	2.5.8	
16	Pinch roller	PQ41125A	★	★	★	●	★	★	★	●	★	★	2.5.9	
Driving system														
17	Capstan motor	PGZ00665								●			2.5.5	
18	Capstan belt	PQM30003-12				●				●			2.5.5	
19	Mode control motor	PU56592V								●			2.5.6	
20	Belt	PQM30003-15				●				●			2.5.6	
21	Supply reel disk	PGZ00894-01-01				△				△			2.5.10	
22	Take-up reel disk	PU57581				△				△			2.5.10	
23	Take-up clutch	PU56650-1-4				○				○			2.5.11	Perform torque check.
24	Supply clutch	PGZ01258				○				○			2.5.11	
Others														
25	Brush ass'y	PU56798-3	★	★	★	○	★	★	★	●	★	★	2.5.13	
26	Tension band ass'y	PQ40851A		○		●		○		●		○	2.5.12	Perform back tension check.
27	Pickup head	PU57619											2.5.13	

(★ = Clean. ○ = Check, or replace if necessary. ● = Replace. △ = Lubricate.)

Table 2-1 Main parts maintenance and replacement standard

2.5 MAIN PARTS REPLACEMENT

Perform all replacements according to the steps provided below.

Remove external covers, boards, connectors, cassette housing, etc. as required. Avoid unnecessarily disturbing other parts and adjustments.

2.5.1 Cassette housing removal

1. Remove side panel and [3] [7] AD REC board Assembly (See Section 1.3)
   Take out screws ① and disengage connector ② . Cut the wiring binder.
   Important: Be sure to bind the wires when reassembling.
2. Take out cassette housing screws ④ and lift the housing. As it will contact the nylon structure ③ of the end sensor, very carefully bend the frame by hand to remove the cassette housing. (It is recommended to set the cassette housing to the Eject mode for removing it with ease.)
3. Reinstall the cassette housing by reversing the above steps.

Note: When removing and reinstalling the cassette housing, use care not to contact or apply pressure to the tention roller.

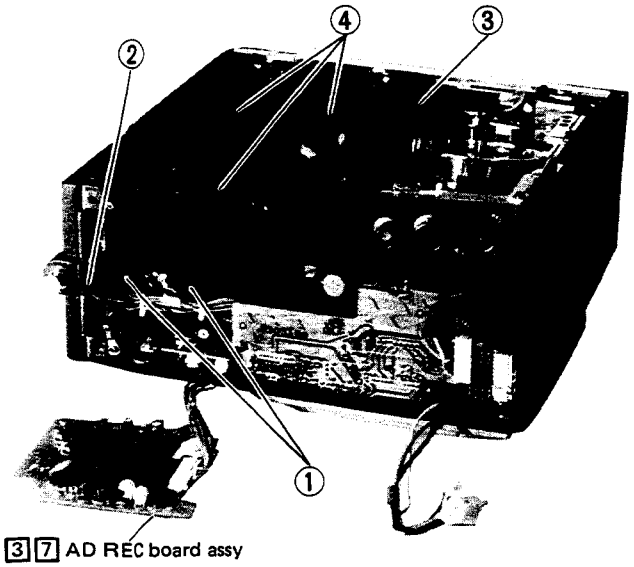


Fig. 2-4

2.5.2 Upper drum replacement

- **Drum cleaning:**
  Moisten Kimwipe* in alcohol or Daifron*. Press with middle finger of right hand against drum (100 to 150 grams pressure). With left hand, turn the upper drum. Perform cleaning in side-to-side direction, while avoiding contact with the heads. By no means wipe in vertical direction, as this may dislodge the heads. To clean the heads, use Xerox* paper. Press against the head (100 to 120 grams pressure) and turn the drum to clean in side-to-side motion; again avoid up-and-down motion.
  (* = Registered trademarks. Check with JVC representative for suggested locally available products.)

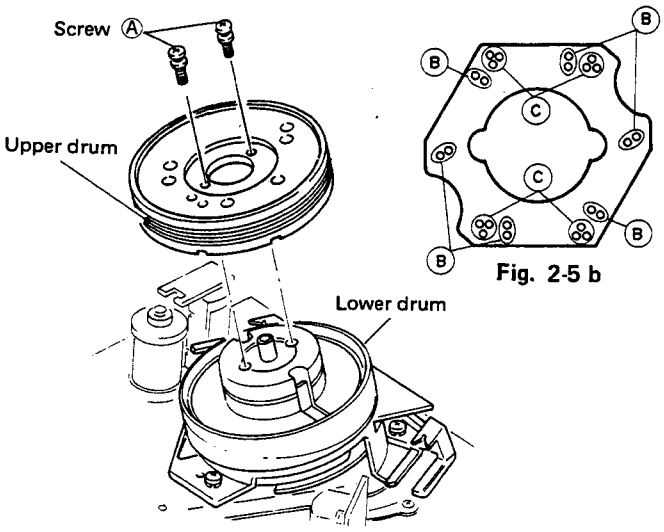


Fig. 2-5 a

Fig. 2-5 b

1. Remove the cassette housing. (See Section 2.5.1)
2. Unsolder the upper drum board ass'y at the points of Ⓒ and Ⓑ (Fig. 2-5b) and take out the board.
   Reference: In such a case of removing the upper drum board together with the upper drum for replacement of the lower drum, etc., unsolder at the point Ⓒ only.
3. Take out 2 screws Ⓐ (Fig. 2-5) and pull the upper drum upwards to remove it.
4. Clean the contacting faces of the new upper drum and the lower drum with alcohol, then install the new upper drum.

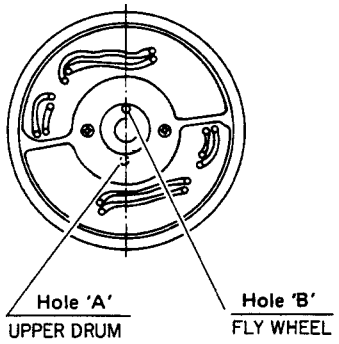


Fig. 2-6

Note: Observe position when installing the new upper drum. As indicated in Fig. 2-6, install with hole 'A' (2.7 mm) 180° opposite hole 'B' (2.0 mm) of the flywheel.

5. After replacing, perform the following checks and adjustments.
   1) Upper drum eccentricity (section 2.5.4)
   2) Tape transport adjustments (section 2.6.5)
   3) Switching point (sections 3.3.7 and 3.3.8)
   4) Tracking preset (section 3.3.9)
   5) Head resonance (section 3.5.9)
   6) FM recording level (section 3.5.10)
   7) Color recording and playback level (section 3.5.12)
   8) Channel balance (section 3.5.13)

2.5.3 Lower drum assembly replacement

1. Remove bottom cover, [0][3] SERVO board assembly and [0][4] MDA board assembly. Disengage CN2. Remove the [1][6] PREAMP board assembly, and disengage the connectors of the drum head, PU head and FG board.
2. Take out 3 screws Ⓐ (Fig. 2-7) and pull the drum assembly upwards to remove it.
3. Use care not to scratch the new lower drum assembly. Install it by reversing the above steps. Tighten the screws in a well balanced manner.

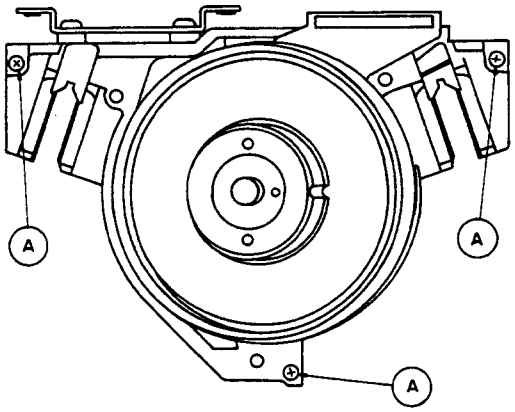


Fig. 2-7

4. After replacing, perform the following checks and adjustments.
   1) Upper drum eccentricity (section 2.5.4)
   2) Tape transport adjustments (section 2.5.6)
   3) Switching point (sections 3.3.7 and 3.3.8)
   4) Tracking preset (section 3.3.9)
   5) Head resonance (section 3.5.9)
   6) FM recording level (section 3.5.10)
   7) Color recording and playback level (section 3.5.12)
   8) Channel balance (section 3.5.13)

2.5.4 Upper drum eccentricity

Notes:

1) Even slight deviation of the upper drum from the drum shaft center can cause jitter and other problems.
2) This adjustment is essential after replacing the upper drum.

1. Remove the cassette housing.
2. As shown in Fig. 2-8, install the Micro-checker (PUJ-49712-2) and Micro-checker attachment (PUJ04006). Attach to points Ⓐ of the panel.
3. Slowly turn the fine adjust knob of the Micro-checker clockwise to where the needle indicates "0". The outer rim can be turned about ±10 scale divisions, but do not turn it beyond this range.
   When the Micro-checker contacts the drum assembly, set to where it contacts between the 1st and 2nd groove of the drum.

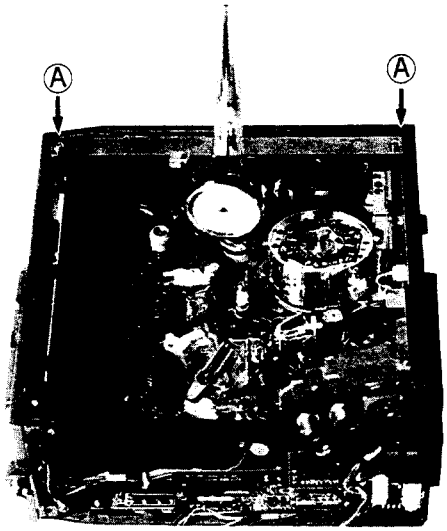
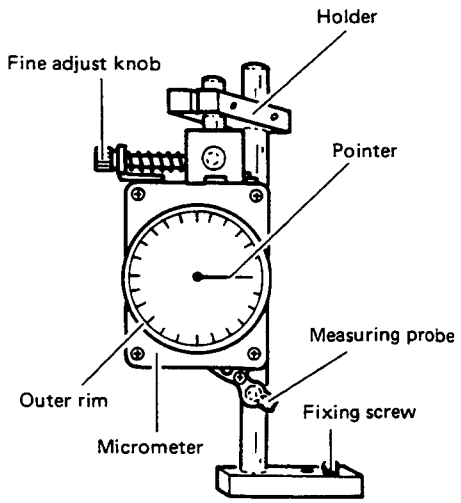


Fig. 2-8 Micro-checker installation

- **Micro-checker cautions**

1) The Micro-checker is a high precision instrument. Use care not to drop it or subject it to strong shock.
2) Do not apply strong force to the measuring probe.
3) The position and directional relationship of the Micro-checker and holder have been predetermined. Do not disassemble or change these relationships.
4) Although the outer rim of the Micro-checker can be turned in the range of ±10 scale divisions, do not apply excess force (more than 300 g-cm) to this section.
5) By no means allow the Micro-checker to contact the heads.
6) Before installing the Micro-checker, turn the fine adjust knob counterclockwise. When installing it, use care not to contact the upper drum.
7) When installing, observe that the probe is pointed toward the center of the upper drum.
8) Gritty or rough sound during measurement indicates unnatural contact. Check for contamination of the upper drum and measuring probe.



4. Slowly turn the upper drum, while using care not to apply sideways pressure. Needle deflection within 2 microns peak-to-peak (±1 micron) is required.
5. If deflection exceeds this range, turn the fine adjust knob counterclockwise to separate the probe from the upper drum. Loosen the two screws of the upper drum and very carefully adjust the position. Then retighten the screws.
6. Again measure the eccentricity. Repeat the above steps until deflection is within 2 microns p-p.
7. After confirming 2 microns p-p, turn the fine adjust knob counterclockwise and remove the Micro-checker.
8. Turn the Tracking control and confirm that CH1 and CH2 FM waveforms reach maximum simultaneously.
9. If abnormal, remove the upper drum. Clean the lower face of the upper drum and the upper face of the lower drum flywheel. Again install the upper drum and repeat above steps 1–9.

2.5.5 Capstan assembly replacement

Note: The capstan assembly consists of capstan motor, capstan FG board and flywheel. These cannot be replaced independently.

1. Disengage the reel belt from the capstan motor and connector CN6 from the servo board.
2. Take out the main deck screws (Fig. 2-9), shift the capstan brake and remove the capstan motor.
3. Install new capstan motor by reversing the above steps.

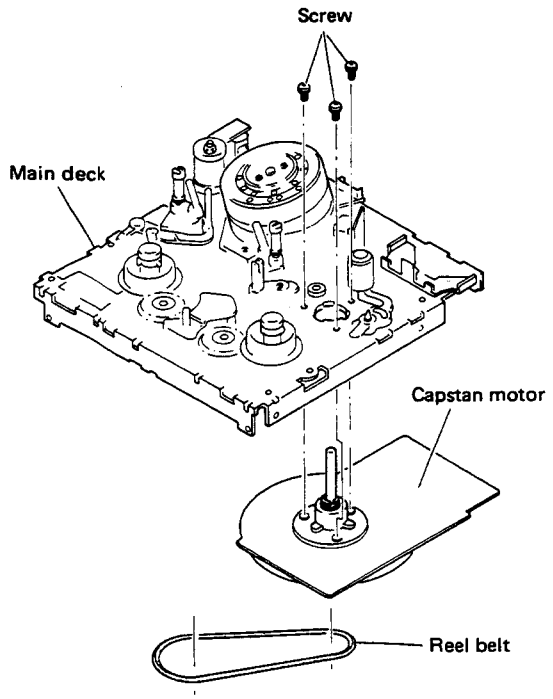


Fig. 2-9

2.5.6 Mode control motor replacement

Note: When replacing only the mode control motor, use care regarding wire polarity.

1. Disengage connector CN10 from the mechacon board.
2. Take out screws (Fig. 2-10) and remove the motor bracket.
3. Install new mode control motor by reversing the above steps.

* If replacing only the mode control motor, proceed to the following steps.

4. After removing the motor bracket, remove wires from the mode control motor.
5. Disengage the belt from the mode control motor, take out screws and remove the mode control motor.
6. Install new mode control motor by reversing the above steps. Use care regarding wire polarity (see Table 2-2).

Motor polarity	Wire color
+	Red
–	Brown

Table 2-2 Motor wiring

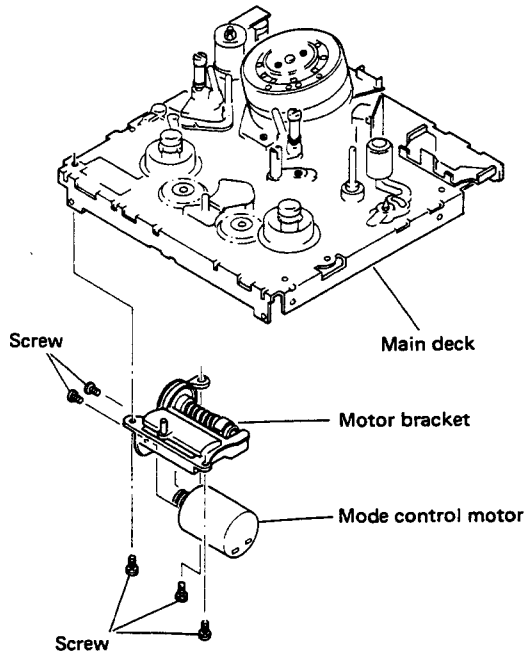


Fig. 2-10 Mode control motor replacement

2.5.7 Full erase (FE) head replacement

1. Take off nut (Fig. 2-11) and remove the impedance roller and its peripheral parts.
2. Disengage connector CN2 from the FULL ERASE board.
3. Remove the spring and remove the FE head in the upward direction.
4. Install a new FE head and reassemble the impedance roller and its peripheral parts.
5. Perform impedance roller height adjustment (section 2.6.5) and interchangeability checks and adjustments (section 2.6.6).

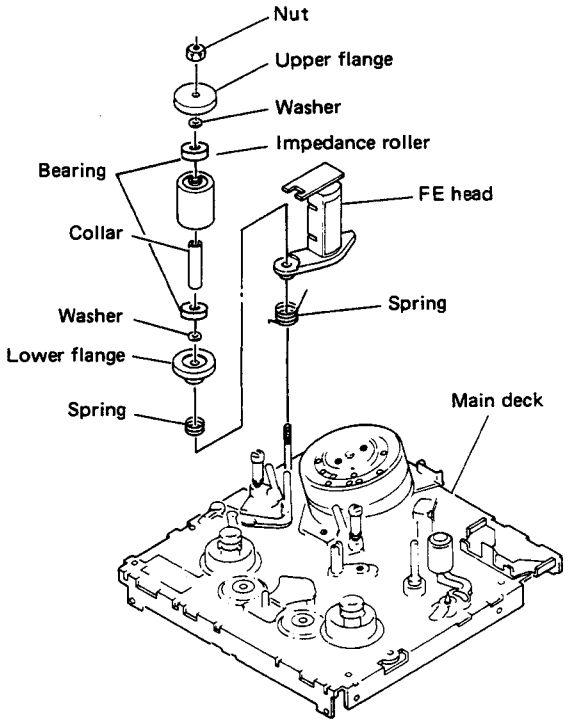


Fig. 2-11 FE head replacement

2.5.8 Audio/Control (A/C) head assembly replacement

Note: Use care not to misplace the coil springs of the A/C head base (these are apt to fly off).

1. Take out 2 mounting screws of the head base and remove the head base.
2. Unsolder and remove the head board.
3. Install a new A/C head at the position indicated in Fig. 2-12.
4. Remount the head base in the previous position.
5. Perform A/C head parallel adjustment (section 2.6.5) and interchangeability checks and adjustments (section 2.6.6).

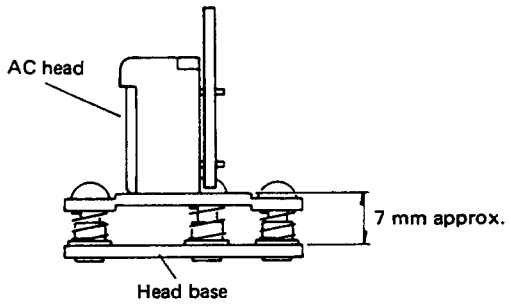


Fig. 2-12 A/C head installation

2.5.9 Pinch roller assembly replacement

1. Take out screw (Fig. 2-13) and remove the pinch roller and its peripheral parts.
2. Install a new pinch roller; secure collar and PR cap with screw.

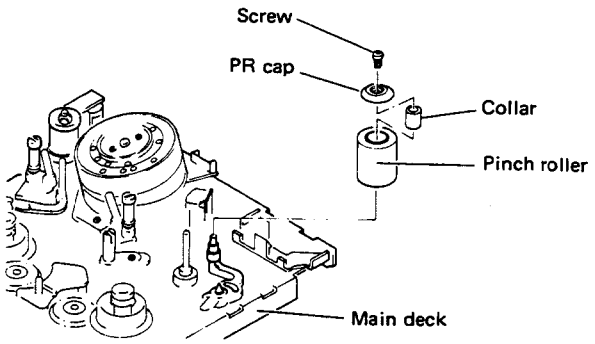


Fig. 2-13 Pinch roller replacement

2.5.10 Reel disk replacement

Note: Do not reuse nylon washers. Procure new parts before disassembly and replacement.

- **Supply reel disk**

1. Disengage the tension band from the tension pole and shift it to one side. This releases the FF brake from the supply reel disk.
2. Take off the slit washer and with the FF brake free, pull the supply reel disk upward to remove it.
   Note: Use care regarding washer at bottom of the supply reel disk.
3. Clean reel shaft with alcohol and apply a small amount of oil.
4. Install a new supply reel disk by reversing the above steps.
5. Perform back tension check (section 2.6.4).

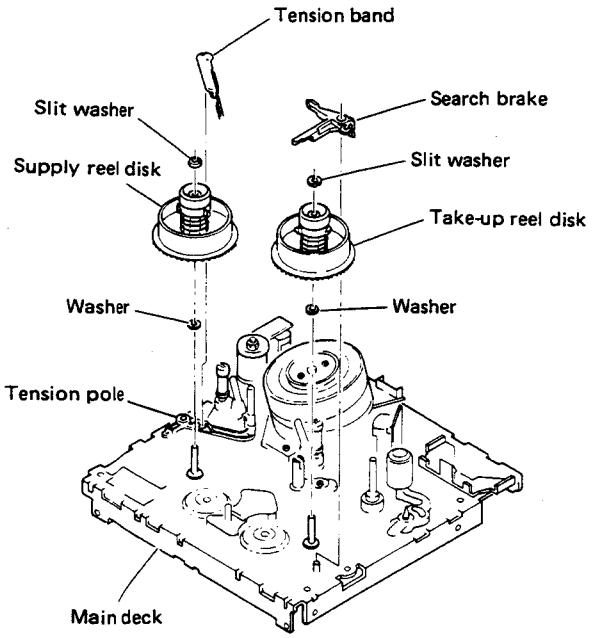


Fig. 2-14 Reel disk replacement

- **Take-up reel disk**

1. Disengage the spring from the search brake and remove the search brake.
2. Take off the slit washer and with the REW brake free, pull the take-up reel disk upward to remove it.
   Note: Use care regarding washer at bottom of the take-up reel disk.
3. Clean reel shaft with alcohol and apply a small amount of oil.
4. Install a new take-up reel disk by reversing the above steps.

2.5.11 Clutch replacement

- **Take-up clutch**

1. Remove the take-up reel disk (section 2.5.10).
2. Take off the slit washer and pull the take-up clutch upward (note lower washer) to remove it.
3. Install a new take-up clutch by reversing the above steps.
4. Perform take-up torque check (section 2.6.3).

- **Supply clutch**

1. Remove the supply disk (section 2.5.10).
2. Take off the slit washer and pull the supply clutch upward (note lower washer) to remove it.
3. Install a new supply clutch by reversing the above steps.

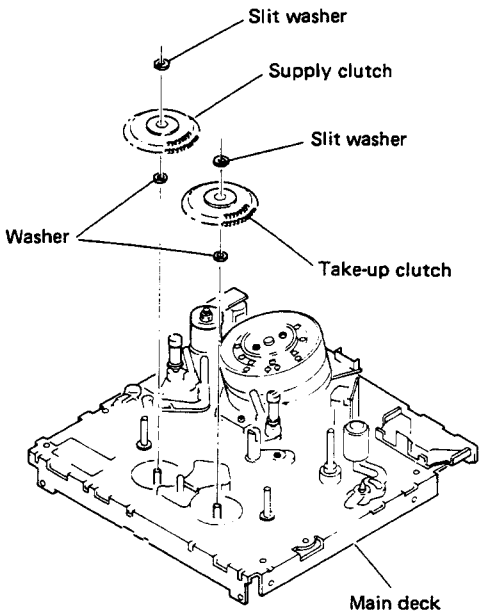


Fig. 2-15 Clutch replacement

2.5.12 Tension band replacement

1. Take out screw (Fig. 2-16) and separate the tension band from the tension pole.
2. Shift the FF brake and remove the tension band.
3. Install the new tension band.
4. Perform tension pole position adjustment (section 2.6.2) and back tension check (section 2.6.4).

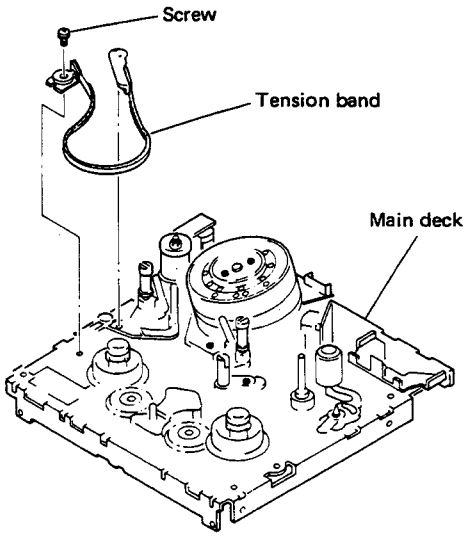


Fig. 2-16 Tension band replacement

2.5.13 Brush and pick-up head replacement

1. Take out screw Ⓐ (Fig. 2-17) and replace the brush.
   Note: Align the brush with the lock hole, then loosen the screw.
2. Unsolder the pick-up head, take out screw Ⓑ and replace the pick-up head.
   Note: Set the pick-up head toward the center of the drum shaft when installing.
3. Perform drum pulse adjustment (section 3.3.1) and PB/REW switching point adjustment (sections 3.3.7 and 3.3.8).

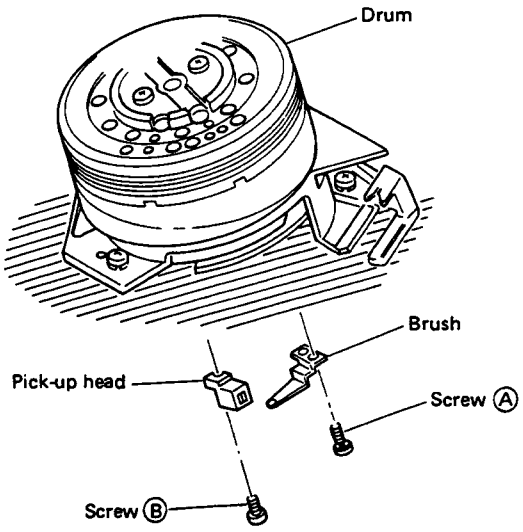


Fig. 2-17 Brush and pick-up head replacement

2.6 CHECKS AND ADJUSTMENTS

2.6.1 Loading mechanism timing

1. When the STOP mark of the control cam faces the center of the loading gear, confirm that boss of loading gear ① faces hole Ⓐ of the supply loading ring (Fig. 2-18).
2. At the same time, confirm that the holes of the supply and take-up loading rings overlap the hole of the main deck (arrow Ⓑ in Fig. 2-18).
3. If deviation is confirmed, remove the control cam. Reinstall the loading gears and connect gear ② so as to obtain the correct positions. To reinstall the control cam, turn loading gear ② counterclockwise to where the holes of loading gears ① and ② overlap, then install.

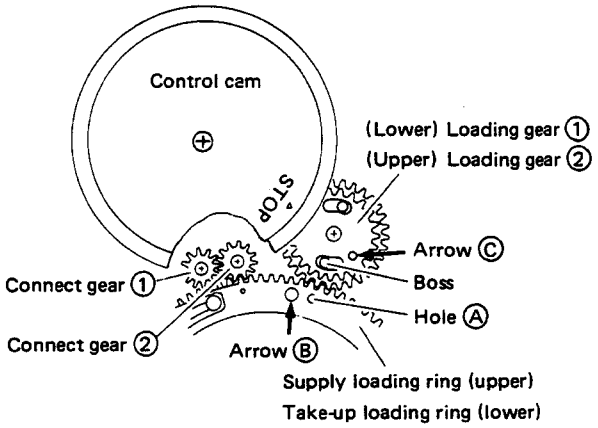


Fig. 2-18 Timing check

2.6.2 Tension pole position (temporary)

1. Without tape, set for the Play mode, then power OFF (see Section 2.1).
2. Remove the cassette housing (see Section 2.5.1).
3. As indicated in Fig. 2-19, adjust the tension band holder securing position so that the end of the tension pole overlaps the left edge of the main deck.
   Note: This is a temporary adjustment. If the holder position was moved, be sure to perform the back tension checks and adjustments of Section 2.6.4.

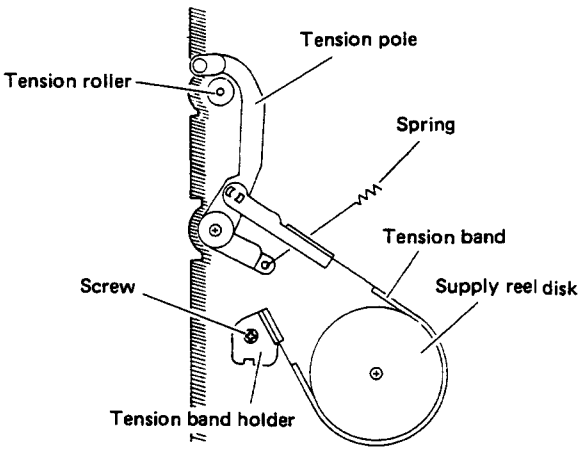


Fig. 2-19 Tension pole position

2.6.3 Take-up torque

1. Use the cassette torque meter (PUJ42881) and set to the play mode.
2. Confirm take-up torque of 60 to 100 gcm. If outside this range, replace the take-up clutch (see Section 2.5.11). The supply clutch should also be replaced.

2.6.4 Back tension

1. Use the cassette torque meter (PUJ42881) and set to the Play mode.
2. Confirm supply torque of 24 to 26 gcm. If outside this range, check the wear of the tension arm spring and tension band. Loosen the screw and adjust the tension band holder securing position to where specifications are met. However, if the value varies widely, also replace the supply reel disk (see Section 2.5.10).

2.6.5 Tape transport system checks and adjustments

Note: The tape transport has been precision-adjusted at the factory and ordinarily does not require readjustment. Perform the following only after confirming problem is in the transport or after replacing parts affected by long term usage.

[1] Tape transport checks

1. Use a spare 180-minute tape. Set for the Play mode at the beginning and end portions of the tape.
2. In the Play mode, confirm absence of tape drift upwards or downwards at the drum intake and exit.

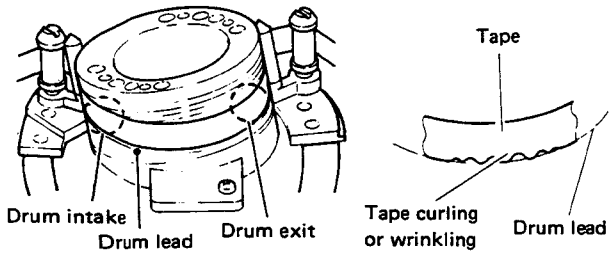


Fig. 2-20 Drum and drum lead

Notes: * With upward drift, the video heads strike the edge of the tape and sound can be heard.
* In case of downward drift, tape curling or wrinkling may occur, and abnormal sound can be heard.
* If abnormal, adjust the guide roller height (see following).

3. In the Play mode, observe the tape between the impedance roller and take-up guide pole. Confirm absence of curling and wrinkling. If abnormal, adjust the impedance roller height and the A/C head inclination.
4. In Search Forward and Search Reverse, inspect all guides and confirm absence of tape damage.
5. When switching between Search FWD and Search REV, confirm absence of tape wrinkling between the capstan and tape guide pole.
6. When switching between Search FWD and Play, confirm absence of tape wrinkling between the take-up guide pin and take-up guide pole.

   After checking as above, perform interchangeability checks and adjustments (see Section 2.6.6).

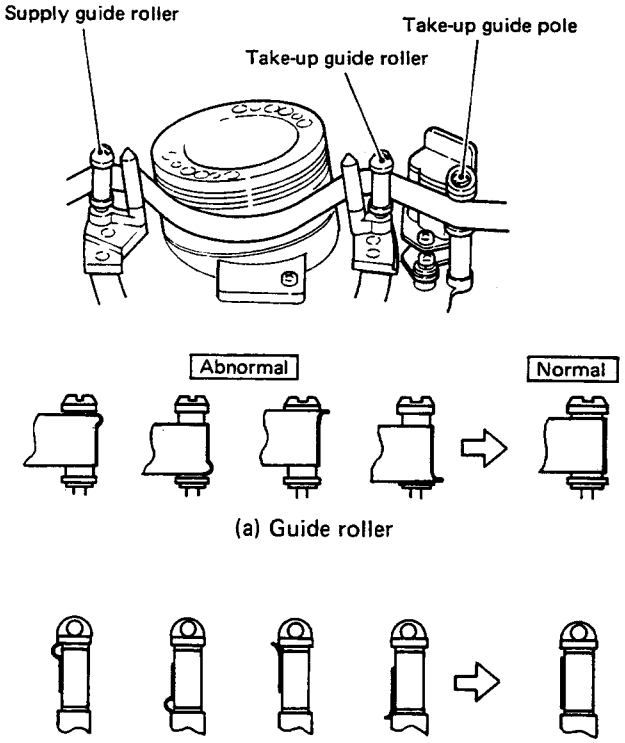


Fig. 2-21

[2] Guide roller height adjustment

1. Loosen the guide roller setscrew (Fig. 2-22) just enough to allow turning the guide roller.
2. Use spare tape and set for the Play mode.
3. Turn the guide roller by small amounts and adjust to where the tape traverses the drum lead without drifting from it.
4. After adjusting, be sure to tighten the setscrew.

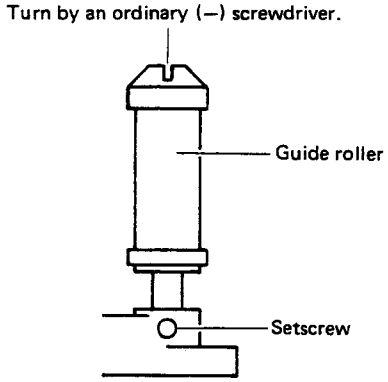


Fig. 2-22 Guide roller height adjustment

[3] Impedance roller height adjustment

1. Use spare tape and set for the Play mode.
2. Turn the upper nut of the impedance roller and adjust to where the lower edge of the tape travels at the bottom edge of the impedance roller.

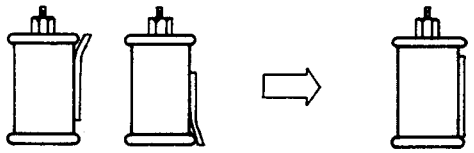


Fig. 2-23 Impedance roller height adjustment

[4] Audio/control head parallel

1. As illustrated in Fig. 2-24, set the parallel check plate (PUJ50204) gently against the A/C head take-up guide pole. Confirm that inclination A is less than 0.1 mm.
2. Set the flat portion of the check plate gently against the A/C head. Confirm absence of space at top, as shown by Ⓑ.

Important: Do not adjust the height or inclination of the take-up guide pole itself.

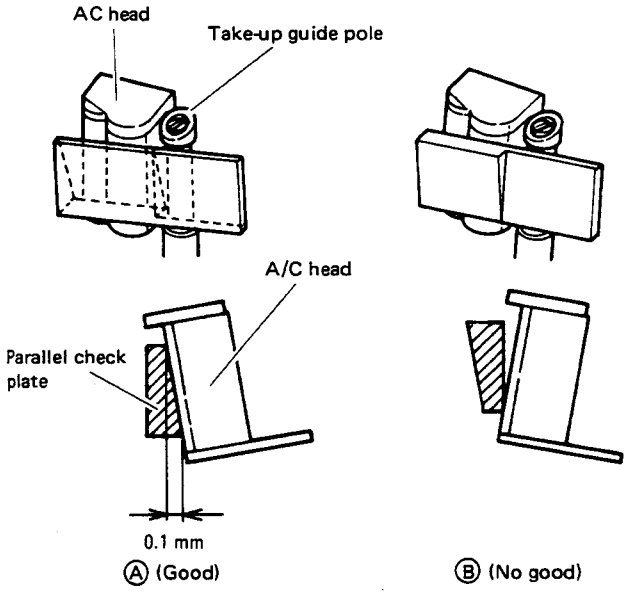


Fig. 2-24 A/C head parallel

[5] Take-up guide pin adjustment

1. Use a spare 180-minute tape which contains a recorded signal and alternate between REC Play and Pause. Confirm smooth tape transport and absence of curling or wrinkling at the take-up guide pin.
2. Also confirm in the Play mode.
3. If abnormality is confirmed, turn the take-up guide setscrew (2 mm) to adjust. See Fig. 2-25.

Notes:

1) Perform this after adjusting the audio/control head parallel (above 4).
2) The effect of turning the setscrew does not appear for about 2 or 3 seconds.
3) Set to Stop, and again to Search Reverse, then repeat the adjustment.

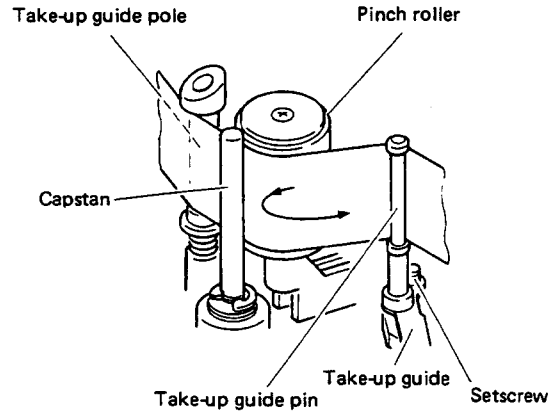


Fig. 2-25 Tape path adjustment

2.6.6 Interchangeability checks and adjustments

Note: Before using Alignment tape, use a spare tape and confirm normal transport operation.

[1] FM waveform checks and adjustments

1. Connect an oscilloscope to Pre-Rec board TP4 (FM OUT). Trigger the oscilloscope externally with the signal from Servo board TP4 (D FF). (TP9 can be connected from the battery terminal box without removing the bottom cover.)
2. Play the stairstep signal of the MHPE Alignment tape.

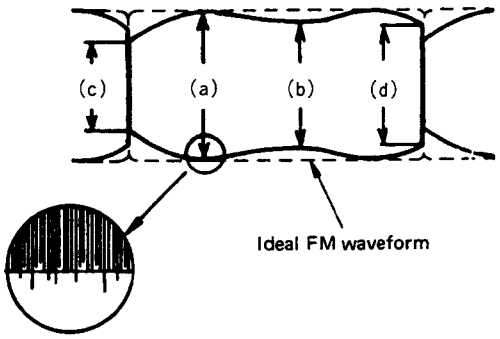


Fig. 2-26 FM waveform (maximum output)

Note: If the waveform is serrated, read the output level where the serrations are most closely aligned.

3. Turn the Tracking control and set for maximum FM output waveform.
4. Adjust the oscilloscope to set the maximum waveform to 4 scale divisions.
5. Confirm that depressions at the drum intake (c) and drum exit (d) exceed 3.4 scale divisions (Fig. 2-26).
6. Confirm that variations at (b), (c) and (d) are greater than 3.6 scale divisions.

7. Turn the Tracking control to both extremes and confirm that variation of the FM waveform is nearly linear (Fig. 2-27).

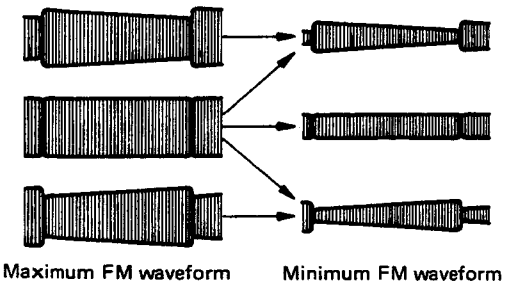


Fig. 2-27 Normal waveform variation

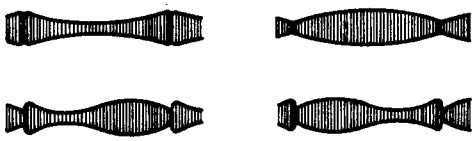


Fig. 2-28 Abnormal waveform variation

8. If variation is distorted, as illustrated in Fig. 2-28, perform audio/control head adjustment. If this is inadequate, proceed to the following steps.
9. Loosen the setscrews of the supply and take-up guide rollers to permit turning.
10. Turn the tracking control to maximum FM waveform output. If the portion at the drum intake appears as shown by (A) in Fig. 2-29, adjust the supply guide roller to obtain a flat waveform as shown by (B).

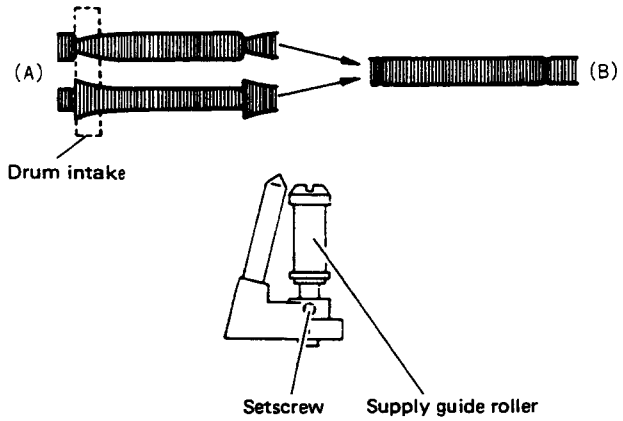


Fig. 2-29 Drum intake waveform adjustment

11. If the portion at the drum exit appears as shown by (C) in Fig. 2-30, adjust the take-up guide roller to obtain a flat waveform as shown by (D).

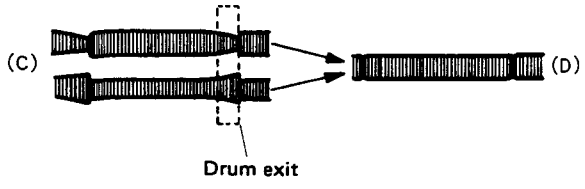


Fig. 2-30 Drum exit waveform adjustment

12. Again confirm absence of tape curling or wrinkling at the impedance roller and take-up guide pole. If abnormality is confirmed at the impedance roller, fine-adjust the impedance roller height.
    If abnormality is confirmed at the take-up guide pole, adjust the audio/control head inclination (see section 2.6.5).
13. Turn the tracking control for minimum FM waveform output. If the waveform appears as shown by the examples (A), (B), (C) or (D) of Fig. 2-31, fine-adjust the supply and take-up guide rollers to obtain a waveform as shown by examples (E), (F) and (G).

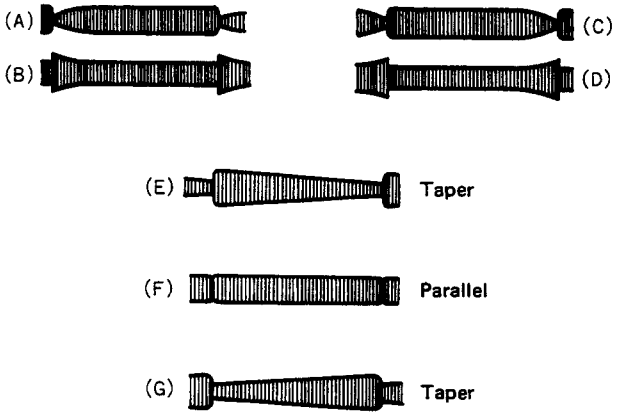


Fig. 2-31 FM waveform at minimum output

Note: If waveform varies, adjust at the point of minimum variation.

[2] Audio head height and azimuth adjustment

If the audio/control head position is incorrect, S/N is impaired during tape playback.

1. Connect AUDIO-1 and AUDIO-2 output signals to CH1 and CH2 of a dual-trace oscilloscope.
2. Play the 6 kHz (stairstep) signal of the MHPE Alignment tape.
3. While observing the output signals, turn screw Ⓒ (Fig. 2-33) for maximum waveforms and absence of phase difference (Fig. 2-32).

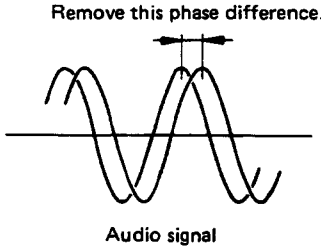


Fig. 2-32 Audio signal phase adjustment

4. Turn screws Ⓐ, Ⓑ and Ⓒ by small and equal increments at a time and adjust for maximum audio output. With screw Ⓐ as reference, screw Ⓑ adjusts inclination and screw Ⓒ adjusts azimuth.
5. Gently press the tape upwards and downwards at the A/C head area. Confirm that the level does not increase.
   Notes:
   1) In order to avoid damaging the Alignment tape, do not turn screw Ⓐ more than 1/4-turn at a time.
   2) After adjusting screw Ⓑ, be sure to adjust audio azimuth with screw Ⓒ.
6. Repeat above steps 3 to 5. Adjust for maximum audio output with minimum variations.

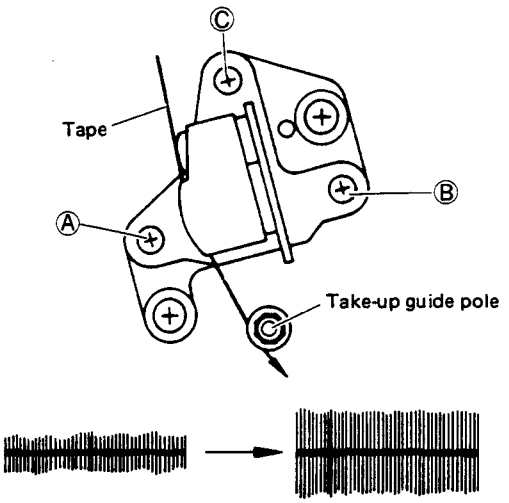


Fig. 2-33 Audio/control head adjustment

[3] Setscrew tightening

1. After confirming normal tape transport, set to the Stop mode and tighten the setscrews.
   Note: Use care not to disturb the guide roller adjustments.
2. Again use the MHPE Alignment tape and perform FM waveform checks.

[4] Servo circuit adjustments

1. Adjust the PB/REC switching point (sections 3.3.7 and 3.3.8).
2. Perform tracking preset adjustment (section 3.3.9).

[5] Control head phase

1. Connect the oscilloscope to Pre-Rec board TP4 (FM OUT). Trigger the oscilloscope externally with the signal from Servo board TP9 (D FF). (TP9 can be connected from the battery terminal box without removing the bottom cover.)
2. Play the stairstep signal of the MHPE Alignment tape. Set the oscilloscope trigger to (—) slope and observe the CH1 waveform.
3. Confirm that maximum FM output is obtained at the center detent (AUTO) position of the Tracking control. If the maximum is not at center, set the control to the center and perform the following steps.
4. Loosen screws Ⓓ and Ⓔ (Fig. 2-34) to the degree that allows sliding the A/C head. Slide the A/C head fully toward the capstan direction.
5. Set the A/C head positioning tool (PUJ47351-2) onto screw Ⓔ with the pin of the tool inserted into the hole.
6. Slowly turn the tool to shift the A/C head assembly in the direction shown by the arrow. Set to the point for maximum FM waveform.

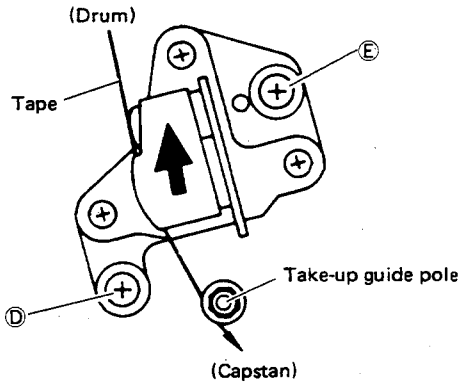


Fig. 2-34 Control head phase adjustment

7. While using care not to disturb the A/C head setting, tighten screws Ⓓ and Ⓔ.
8. Turn the Tracking control and confirm maximum FM waveform at the center detent position.

Note: Tighten screws Ⓓ and Ⓔ so as not to vary the FM waveform.

[6] Video and FM audio tracking phase check

1. Connect CH1 of a dual-trace oscilloscope to TP2 (FMA OUT) of the FM Audio Amp board and CH2 to TP4 (FM OUT) of the Video Preamp board.
2. Play portion (2) (Stairsteps, FM Audio Carrier only) of the MH-F8 Alignment tape.
3. Turn the Tracking control for maximum audio FM envelope. Set the waveform to 4 scale divisions.
4. Then turn the Tracking control for maximum video FM envelope. At this time, confirm that the audio FM envelope is more than 3.6 scale divisions (compare at maximum level point).
5. If above waveform control cannot be obtained, the upper drum unit may require replacement.

[7] REC/PB FM level checks

1. For FM video, use a test pattern signal input. For FM audio do not apply a signal (but supply a test pattern video input).
2. Adjust the Tracking control for maximum waveform at all check points. Set the maximum waveform to 4 scale divisions.
3. If the FM level varies or if there is FM loss, check according to Table 2-3.

Check Item	Check Point	Set mode & Tape used	FM level (within)	FM Loss (within)
FM VIDEO	V. PRE AMP TP-4	VHS	3.6 scale div.	3.6 scale div.
FM VIDEO	V. PRE AMP TP-4	S-VHS	3.6 scale div.	3.4 scale div.
FM AUDIO	FMA PRE AMP TP-2	S-VHS	3.4 scale div.	3.2 scale div.

Table 2-3

4. If above waveforms cannot be obtained, the upper drum unit may require replacement.

Note: Use tape that has not been damaged for checking.

[8] Final checks

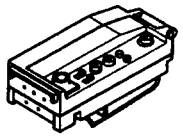
1. In the Play mode, inspect each of the shafts, rollers and head section of the transport and confirm absence of tape curling, wrinkling or drifting.
2. Record and play back a stairstep signal. Confirm that playback compares closely with the Alignment tape.
3. Observe FM waveform difference between when the set is lying flat and when it is standing vertically. With the maximum at 4 scale divisions, confirm more than 3.8 scale divisions at the other position. Also confirm above items 1 and 2 at these configurations.
4. Perform drum and capstan circuit checks and adjustments (section 3.3).
5. Perform audio circuit checks and adjustments (section 3.4).
6. Perform video circuit checks and adjustments (section 3.5).

SECTION 3
ELECTRICAL ADJUSTMENTS

3.1 PRELIMINARY CHECKS AND CAUTIONS

1. Since the BR-S411E is equipped with no VIDEO IN terminal nor AUDIO LINE IN terminal, it is required to connect an adapter (SA-S41E) for adjustment of this model.
   Note: When the SA-S41E is used, make sure to confirm the following matters.

SA-S41E



	50-pin connector	Level (1k-ohm termination)
Y OUT LEVEL	Pin 1	1 Vp-p
C OUT LEVEL	Pin 2	0.3 Vp-p (Burst level)

2. Adjustments are required after replacing the video heads, major mechanical parts and parts of the electrical circuits. In all cases, first confirm that adjustment of a specific part is actually needed before disturbing its setting.
3. If mechanism adjustments have been performed, again check that these are correct and precise before proceeding to electrical adjustments.
4. All adjustments are performed in the circuit boards.
5. Avoid unnecessary interrupting power while tape is running. This may damage the tape.
6. If warning message is displayed, remove tape, shut off power, and correct the cause before proceeding further.

3.2 REQUIRED TEST INSTRUMENTS AND FIXTURES

1. The following test instruments and fixtures (see Fig. 3-1) are required for electrical adjustments. Attempts to adjust without them would entail inordinate time and would not yield the required precision and performance.
2. In addition to the special fixtures, check that the following test equipment is available.
   - Frequency counter (better than 10 MHz, 100 mV sensitivity, high impedance input)
   - Video signal generator (Model 1411, TG7/2 or equivalent)
   - Video noise meter
   - Waveform monitor
   - Digital voltmeter (capable of reading down to 1 mV DC)
   - Sweep signal generator (100 kHz to 10 MHz)
   - Oscilloscope (dual-trace, better than 500 MHz)
   - Monitor-TV
   - Vectorscope
   - Audio tester
3. Recommended additional fixtures

1) Shorting lead
This can be constructed easily as shown in the figure. It is used for shorting test pins.

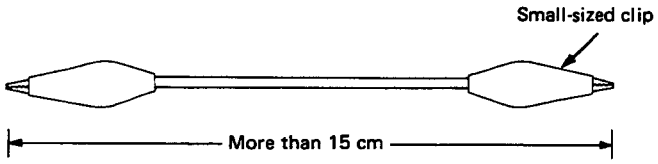


Fig. 3-2

2) Pach cord (PGJ05020)
To be used between the COLOR PWB and the COLOR SUB PWB or the PB COM PWB, and used between the AUDIO PWB and the FMA PWB for measuring voltage and relating repair. (Refer to Fig. 3-3.)

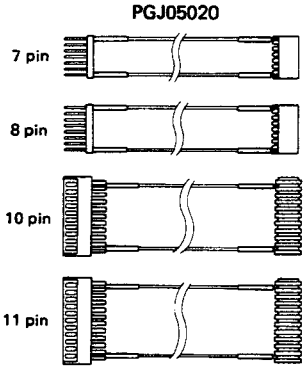


Fig. 3-3

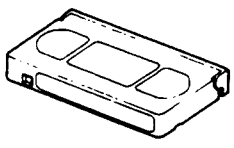
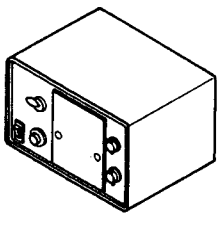
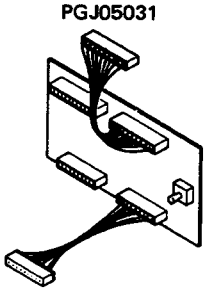
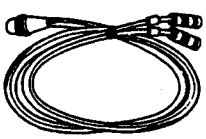
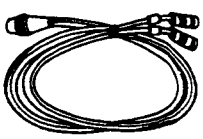
Alignment tape	Carrier checker	* HEAD RESO. JIG	DUB OUT Cable	DUB IN cable
MHPE, MH-8, MH-F8, MHVE-2H, MHVE-2, MHAE	PGJ05008-2	PGJ05031	PGJ05018	PGJ05028
				

Fig. 3-1 Required special test equipment

* New fixture

3.2.1 Alignment tape specifications

- **MH-8**

No.	PB time	Video signal	Audio signal	Description
1	2 min.	Colour sweep	400 Hz (–10 dB)	for check and adjustment of frequency characteristic in video PB circuits for check and adjustment of frequency characteristic in audio PB circuits
2	2 min.	"	100 Hz (–10 dB)	
3	2 min.	"	8 kHz (–10 dB)	
4	4 min.	"	–	

- **MH-F8**

No.	PB time	Video signal	Audio signal	Description
1	5 min.	–	Carrier only	for check and adjustment of mechanism interchangeability
2	5 min.	Stairstep	Carrier only	
3	5 min.	–	1 kHz (±50 kHz dev.)	for check and adjustment of FM audio PB circuits

- **MHPE**

Video signal	Audio signal	Description	
VHS SP mode Stairstep	6 kHz	for check and adjustment of interchangeability for check and adjustment of the servo circuit for adjustment of audio head azimuth	Usable in place of MH-2 stairstep

- **MHVE-2**

Video signal	Audio signal	Description	
VHS SP mode Colour bars	–	for check and adjustment of video signal PB circuits	Usable in place of MH-2 colour bars

- **MHAE**

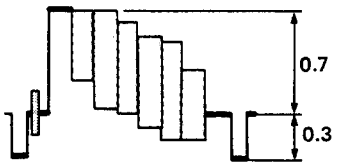
Video signal	Audio signal	Description	
–	1 kHz (0 dB)	for check and adjustment of audio signal PB circuits	Usable in place of MH-2 1 kHz signal

- **MHVE-2H**

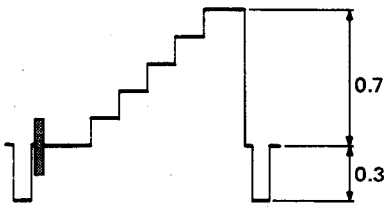
Video signal	Audio signal	Description	
S-VHS SP mode Colour bars	–	for check and adjustment of video signal PB circuits	Usable in place of MH-2H SP mode colour bars

3.2.2 Required video system test signals

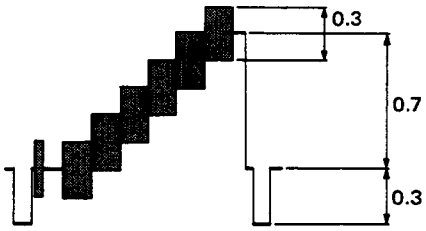
1. EBU 75% colour bars



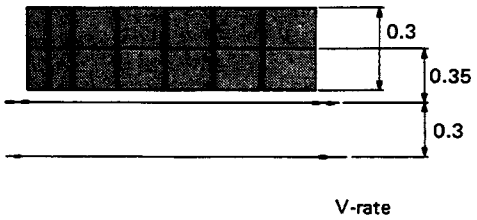
2. 5 steps



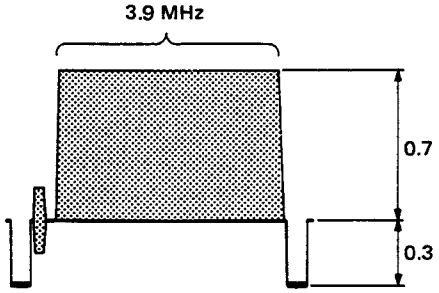
3. Modulated 5 steps



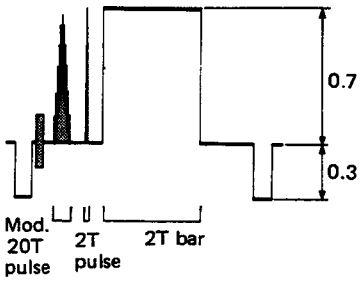
4. Video sweep (100 kHz – 5 MHz)



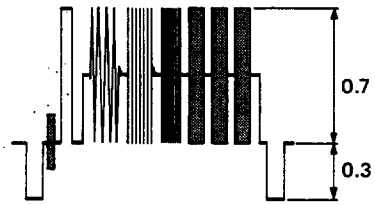
5. 3.9 MHz sine wave



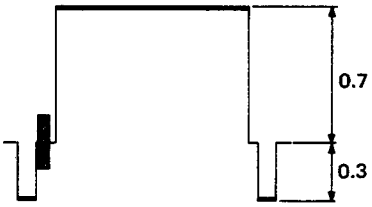
6. Pulse & Bar



7. Multiburst (100%)



8. 100% white

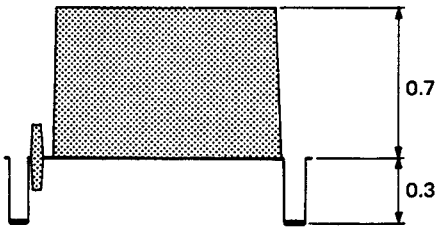


This can be used in place of a test pattern signal.

9. Sweep

10. 100% Chroma

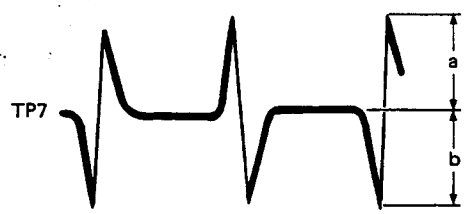
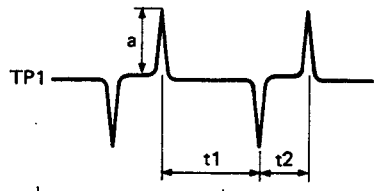
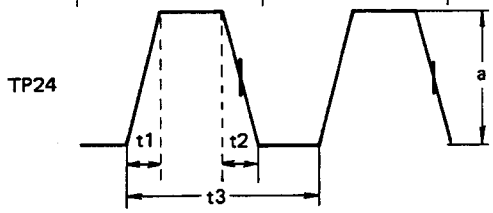
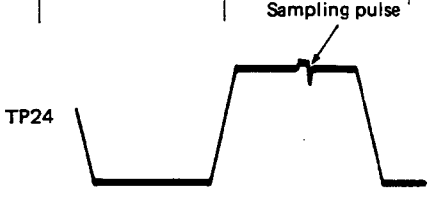
Another pure color may also be used. A large colour level allows easier adjustment.

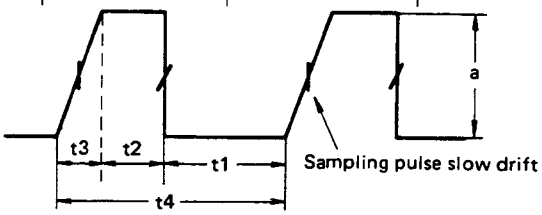
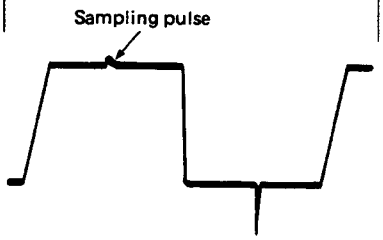
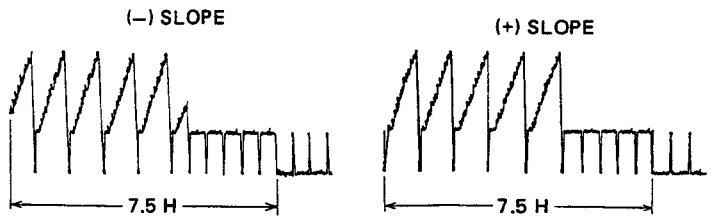


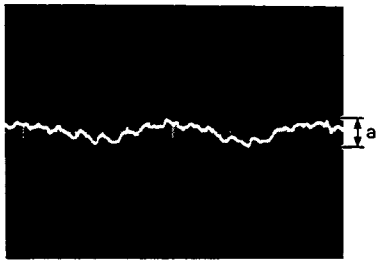
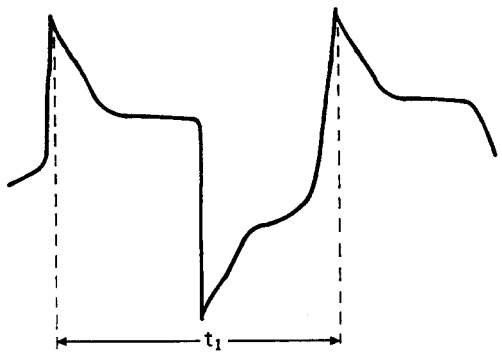
[UNIT: Vp-p]

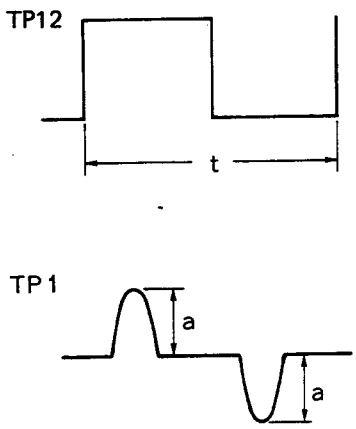
3.3 DRUM AND CAPSTAN SERVO (SERVO CIRCUIT)

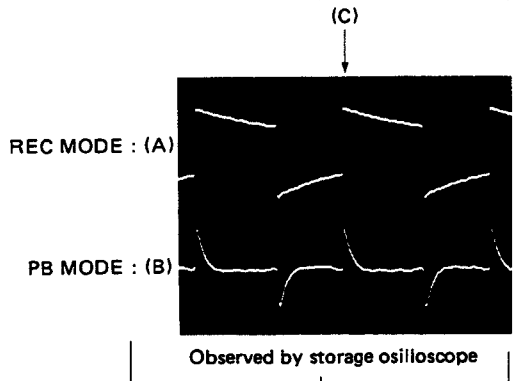
Note: Unless otherwise mentioned, check points and adjustment parts locations are on the Servo board.

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	Drum pulse level	TP7	–	Color bars	REC	1) Connect an oscilloscope to TP7. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) As indicated in the figure, confirm that a and b are greater than 0.7 Vp-p. **Note:** Drum servo is synchronized.
				a ≧ 0.7 Vp-p b ≧ 0.7 Vp-p		
2	CTL pulse check	TP1	–	MHPE (Stairstep)	PB	1) Connect the oscilloscope to TP1. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) Reger to the figure and confirm that positive pulse a is greater than 0.35 Vp-p. 3) Confirm that negative and positive going pulses conform to t1 > t2, as indicated in the figure. 4) Use spare tape to record and play back a TV test pattern. 5) As in above step 2, confirm that pulse a is greater than 0.35 Vp-p.
				Monoscope or Color bars	REC ⬇ PB	
				a ≧ 0.35 Vp-p t1 > t2		
3	Drum trapezoid	TP24	–	Color bars	REC	1) Connect the oscilloscope to TP24. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) Confirm waveform proportions indicated in the figure. a = 5.0 ± 0.4 Vp-p t2 = 3.2 ± 0.5 ms t3 = 40.0 ms 3) Adjust the oscilloscope to set t2 to 2 scale divisions. Confirm that t1 is between 1.6 and 2.4 scale divisions.
						
4	Drum discirminator center	TP24	R27	Color bars	REC	1) Short TP25 and TP GND. 2) Connect the oscilloscope to TP24. Trigger the oscilloscope externally with the signal from TP17 (D FF). 3) As indicated in the figure, confirm that sampling pulse drift with respect to the trapezoid period is greater than 5 seconds. 4) If necessary, adjust R27 to obtain greater then 5 seconds. 5) After adjusting, remove the short between TP25 and TP GND.
						

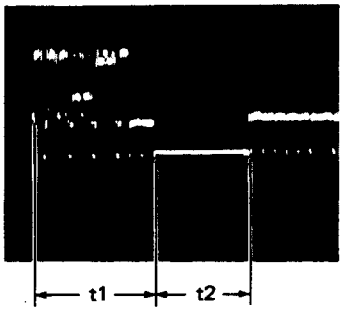
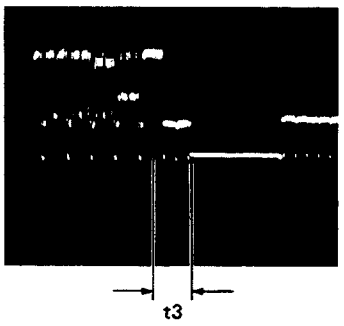
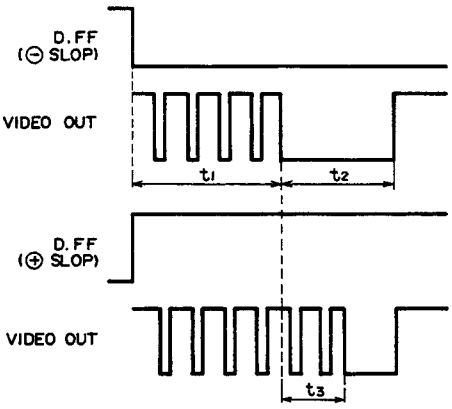
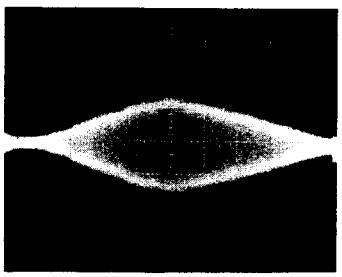
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
5	Capstan trapezoid	TP20 	–	Color bars	REC	1) Connect the oscilloscope to TP20. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) As indicated in the figure, confirm the following relationships. a = 5.0 ± 0.4 Vp-p t3 = 4.0 ± 0.5 ms t4 = 40.0 ms 3) Adjust the oscilloscope to set t2 to 3 scale divisions. Confirm that t1 is between 2.4 and 3.6 scale divisions.
6	Capstan discriminator center	TP20 	R49	Color bars	REC	1) Connect a shorting wire between TP21 and TP GND. 2) Connect the oscilloscope to TP20. Trigger the oscilloscope externally with the signal from TP17 (D FF). 3) As indicated in the figure, confirm that sampling pulse drift with respect to the trapezoid period is slower than 5 seconds. 4) If necessary, adjust R49 to obtain greater than 5 seconds. 5) Remove the shorting wire from TP21 and TP GND.
7	H discriminator	VIDEO OUT (75-ohm termination) ⬇ Monitor TV	R45	MHVE-2 (Color bars)	SEARCH	When connecting RM-G410U Remote Controller 1) Connect VIDEO OUT to monitor-TV (terminate at 75Ω). 2) Set for Serch mode x -1. 3) Observe monitor picture and adjust R45 for minimum color error.
8	PB switching point	VIDEO OUT 	R105, R103	MHPE (Stairstep)	PB	1) Connect the oscilloscope to VIDEO OUT. Trigger the oscilloscope externally with the signal from TP17 (D FF). Set the slope to (–). 2) Adjust R105 to set the trigger point 7.5 ± 0.5 H from V. sync. 3) Set the oscilloscope slope to (+) and adjust R103 to set the trigger point 7.5 ± 0.5 H from V. sync.

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
9	REC switching point	TP15  	R147	Color bars	REC	1) Connect the oscilloscope to TP15. Trigger the oscilloscope externally with the signal from TP17 (D FF). Set the slope to (–). 2) Adjust R147 to set the trigger point 6.5 ± 0.5 H from V. sync.
10	CTL amp noise level	TP1  a ≦ 70 mVp-p	–	Color bars	REC ↓ PB ↓ STILL	1) Connect the oscilloscope to TP1. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) As shown in the figure, confirm noise level of less than 70 mVp-p. **Note:** Ground oscilloscope to TP GND.
11	Tape speed	TP12 ↓ Frequency counter	–	Color bars	REC	1) Connect a frequency counter to TP12 and confirm 504 ± 1.5 Hz.
12	Search speed	TP1 VIDEO OUT (75-ohm termination) ↓ Monitor TV  	–	MHVE-2 (Color bars)	SEARCH	1) Trigger oscilloscope externally with the signal from TP17 (D FF). 2) Connect VIDEO OUT to monitor-TV (terminate at 75 Ω). 3) Connect oscilloscope to TP1 and confirm width of time t_1 (see figure). 4) In the Search FWD mode X9, confirm the following relationship. $t_1 = 4.3 \pm 0.2$ ms 5) In the Search REV mode X–9, confirm the following relationship. $t_1 = 4.7 \pm 0.2$ ms 6) Also confirm that noise bar does not drift in the Search mode.

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
13	Slow mode tape speed	TP12 TP1 VIDEO OUT (75-ohm termination) ↓ Monitor TV 	–	Color bars	REC ↓ PB	When connecting RM-G410U Remote Controller 1) Connct the oscilloscope to TP12. 2) Set for the Slow Search mode X1/2 and confirm the following relationship. t = 3.65 to 3.95 ms 3) In the Slow Search mode X–1/2, confirm the following relationship. t = 3.65 to 3.95 ms 4) Connect the oscilloscope to TP1 and confirm the following for both X1/2 and X–1/2. a ≧ 0.2 V
14	Tracking preset	TP1	R138	Color bars	REC ↓ PB	1) Connect the oscilloscope to TP1. Trigger the oscilloscope externally with the signal from TP17 (D FF). 2) Set the Tracking control to the center detent position. 3) Use a spare tape and record a color bars Refer to the figure and adjust R138 so that recording CTL pulse (A) is aligned with playback waveform (B). 4) Again check the PB switching point adjustment (above item 8) and if necessary, repeat the adjustments of items 8, 9 and 14. **Note:** Since recording and playback waveforms cannot be seen simultaneously, set the waveform rising edge (C) to the center grid for easier interprinting.



Observed by storage osilloscope

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
15	V. pulse position	VIDEO OUT (75-ohm termination)	R113, R114	Color bars	REC ↓ PB ↓ STILL	**Note:** This adjusts the synthesized vertical pulse width and position. 1) Connect the oscilloscope to VIDEO OUT. Trigger the oscilloscope externally with the signal from TP17 (D FF). Set the slope to (–). 2) Align the falling edge of the V. pulse with the oscilloscope center grid. Refer to the ratings shown in the figure. 3) Adjust t2 with R113. 4) Set the oscilloscope to (+) slope and adjust t3 with R114.
		(–) SLOPE 		t1 = 300 ± 50 μsec t2 = 250 ± 50 μsec t3 = 100 ± 20 μsec		
		(+) SLOPE 			SEARCH	When connecting RM-G410U Remote Controller 1) When V pulse is applied during both forward and reverse directions of the Search mode x9 and Slow Search mode x⅓, confirm the following relationship. t3 = 0 ± 20 μs 
16	x-1 Play tracking preset	TP4 (V. PRE PWB) 	R127	Color bars	SEAR-CH (X–1)	When connecting RM-G410U Remote Controller 1) Set the Tracking control to the center detent position. 2) Connect the oscilloscope to TP4 of the V. PRE board. Trigger the oscilloscope externally with the signal from TP17 (D FF). Set the slope to (–). 3) Adjust R127 to set the FM waveform level to maximum at the oscilloscope center grid.

3.4 AUDIO CIRCUIT

Notes:

1) Unless otherwise mentioned, all check points and adjustment parts are located on the AUDIO board.
2) Unless otherwise mentioned, set switches as indicated below.

Switches of the Mainframe				Switches of the Adapter	
– Rear Cover –		– Top Cover –			
Hi-Fi REC SW	: ON	INPUT SELECT SW	: LINE	INPUT SELECT SW	: LINE
AUDIO LIMITER SW	: OFF	INPUT LEVEL SW	: –20		
DOLBY NR SW	: OFF	AUDIO OUTPUT SW	: –6		
AUDIO OUT SW	: NORM				
AUDIO MONITOR SW	: MIX				
METER SELECT SW	: AUD-2 (R)				
REC MODE SW	: VHS				

3) Where a step calls for change from initial setting, return to the initial setting after completing the adjustment.
4) Use 180-minute tape, unless otherwise mentioned.
5) 0 dBs = 0.775 Vrms = 2.19 Vp-p.

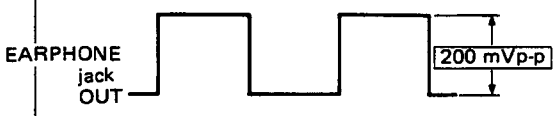
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	Audio level (Margin & VR setting)	AUDIO OUT ⬇ Audio Level Meter	REC LEVEL VR	1 kHz/–6 dBs (AUDIO IN)	E-E	1) From initial setting, set the AUDIO OUT switch to Hi-Fi. 2) Turn the Hi-Fi REC LEVEL control fully clockwise. Confirm AUDIO OUT levels of +8.0 ± 1.5 dBs for both channels. 3) After checking, set the Hi-Fi REC LEVEL control for –6.0 dBs at AUDIO OUT. 4) Return to initial settings. AUDIO OUT switch: NORM. 5) Turn the NORMAL REC LEVEL controls fully clockwise. Confirm +8.0 ± 1.5 dBs for both channels. 6) After checking, set the NORMAL REC LEVEL controls for –6 dBs. **Note:** Leave NORMAL REC LEVEL controls at this setting for the following steps.
2	Audio level meter	AUDIO OUT ⬇ Audio Level Meter	R198 (L ch) R200 (R ch)	1 kHz/–6 dBs (AUDIO IN)	E-E	1) Confirm –6 dBs at AUDIO OUT. 2) Look directly at the AUDIO LEVEL meters. Adjust R198 and R200 for 0 VU.
3	N. audio PB frequency response	AUDIO OUT ⬇ Audio Level Meter 400 Hz: 0 dB (reference) / 100 Hz: 0 ± 2.0 dB / 8 kHz: 0 dB	R46 (L ch) R87 (R ch)	MH-8 400 Hz 100 Hz 8 kHz	PB	1) Play 400 Hz signal of MH-8 alignment tape. Measure this level at AUDIO OUT as reference (0 dB). 2) Play 100 Hz signal of MH-8 alignment tape and confirm output level of 0 ± 2.0 dB. 3) Play 8 kHz signal of the MH-8 alignment tape. Adjust R46 and R87 for 0 dB output level.
4	N. audio PB level	AUDIO OUT ⬇ Audio Level Meter	R48 (L ch) R89 (R ch)	MHAE (1 kHz)	PB	1) Play 1 kHz signal of MHAE alignment tape and adjust R48 and R89 for –8 dBs output elvel.
5	Full erase voltage Bias frequency	TP17 TP15	–	No signal input	REC	1) Connect the oscilloscope to TP17. 2) Confirm erase voltage of DC 12 ± 1 V. 3) Connect the oscilloscope or frequency counter to TP15. 4) Confirm frequency of 68 ± 5 kHz (13.7 to 15.9 μs).

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
6	Bias level	TP5 (L ch) TP6 (L ch) TP7 (R ch) TP8 (R ch) ⬇ Audio Level Meter	R104 (L ch) R105 (R ch)	No signal input	REC	1) Use S-VHS tape (180 minutes). 2) Use initial setting. REC MODE switch: S-VHS 3) Connect (+) side of an audio tester to TP5 (TP7) and (–) side to TP6 (TP8). 4) Adjust R104 and R105 for 4.5 Vrms bias level for both L and R channels.
		TP5 (L ch) TP6 (L ch) TP7 (R ch) TP8 (R ch) ⬇ Audio Level Meter	R323 (L ch) R324 (R ch)	No signal input	REC	5) Use VHS tape and set REC MODE switch to VHS. 6) Connect (+) side of an audio tester to TP5 (TP7) and (–) side to TP6 (TP8). 7) Adjust R323 and R324 for 3.2 Vrms bias level for both L and R channels.
7	N. audio REC/PB level	AUDIO OUT ⬇ Audio Level Meter	–	1 kHz/–6 dBs (AUDIO IN)	REC ⬇ PB	• **VHS mode** 1) Record and play back a 1 kHz/–6 dBs signal. 2) Confirm playback levels of –6.0 ± 0.5 dBs for both L and R channels (channel difference within 0.5 dB). If necessary, Adjust R51 and R92.
		TP9 (L ch) TP10 (R ch)	R51 (L ch) R92 (R ch)	1 kHz/–6 dBs (AUDIO IN)	REC	3) If level difference occurs, measure TP9 (TP10) and correct for the level difference. Example: If one of the measured values is 2 dB too low, increase the level by 2 dB. 4) Again, check according to above steps 1) and 2).
		AUDIO OUT ⬇ Audio level meter	–	1 kHz/–6 dBs (AUDIO IN)	REC ⬇ PB	• **S-VHS mode** 5) Use S-VHS (180-minute) tape. 6) Set REC MODE switch to S-VHS. 7) Record and play back a 1 kHz/–6 dBs signal. 8) During playback, confirm –6 ± 2.0 dBs for both L and R channels.

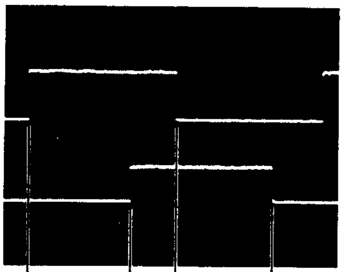
<table>
<tr><th>No.</th><th>Item</th><th>Check Point</th><th>Adjustment Parts</th><th>Signal</th><th>Mode</th><th>Description</th></tr>
<tr><td>8</td><td>N. audio REC/PB frequency response</td><td>AUDIO OUT
⬇
Audio Level Meter</td><td>(R104
R105)</td><td>40 Hz/
−26 dBs
100 Hz/
−26 dBs
1 kHz/
−26 dBs
12 kHz/
−26 dBs
(AUDIO IN)</td><td>REC
⬇
PB</td><td>1) Use S-VHS (180-minute) tape.
2) Set the REC MODE switch to S-VHS.
3) In succession, record 40 Hz, 100 Hz, 1 kHz and 12 kHz signals.
4) With the 1 kHz playback level taken as 0 dB, confirm that the other signals conform to the Table. Also confirm that the 12 kHz channel level difference is within 3 dB.
5) If out of specification, perform one of the following adjustments.
a) If the 12 kHz playback level is higher than specified, raise the bias level (see item 6). (Max. 5.0 mVrms)
b) If the 12 kHz playback level is lower than specified, reduce the bias level (see item 6). (Min. 3.0 mVrms)
6) Repeat the above steps until specifications are fulfilled.</td></tr>
<tr><td></td><td></td><td>AUDIO OUT
⬇
Audio Level Meter</td><td>(R323
R324)</td><td>40 Hz/
−26 dBs
100 Hz/
−26 dBs
1 kHz/
−26 dBs
12 kHz/
−26 dBs
(AUDIO IN)</td><td>REC
⬇
PB</td><td>7) Use VHS (180-minute) tape.
8) Set DOLBY NR switch to ON and REC MODE switch to VHS.
9) In succession, record 40 Hz, 100 Hz, 1 kHz and 12 kHz signals.
10) With the 1 kHz playback level taken as 0 dB, confirm that the other signals conform to the Table. Also confirm that the 12 kHz channel level difference is within 3 dB.
11) If out of specification, perform one of the following adjustments.
a) If the 12 kHz playback level is higher than specified, raise the bias level (see item 6). (Max. 4.2 mVrms)
b) If the 12 kHz playback level is lower than specified, reduce the bias level (see item 6). (Min. 2.2 mVrms)
12) Repeat the above steps until specifications are fulfilled.</td></tr>
<tr><td>9</td><td>Alarm level</td><td>EARPHONE jack or TP26</td><td>R190</td><td>No signal input</td><td>FF
⬇
TAPE END</td><td>1) Connect the oscilloscope to the EARPHONE jack and run the tape in FF to the end of tape.
2) As indicated in the figure, adjust R190 for an output waveform of 200 mVp-p.</td></tr>
</table>

REC mode	40 Hz	100 Hz	1 kHz	12 kHz
S-VHS	−2.0 ± 3.0 dB	0 ± 2.5 dB	0 dB (reference)	$0^{+1.5}_{-2.5}$ dB

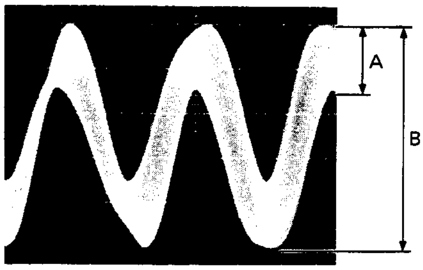
REC mode	40 Hz	100 Hz	1 kHz	12 kHz
VHS	−2.0 ± 3.0 dB	0 ± 2.5 dB	0 dB (reference)	$0^{+1.5}_{-2.5}$ dB



No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
10	Crosstalk cancel	AUDIO CH-1 OUT ⬇ Audio Level Meter	R40	3 kHz/–6 dBs (AUDIO CH-2 IN)	AUDIO DUB	1) Leave AUDIO CH-1 line input open. 2) Connect a 3 kHz/–6 dBs signal to AUDIO CH-2 line input. 3) Use a tape without a prior audio signal and perform audio dubbing. Adjust R40 for minimum CH-1 output.
11	FM audio switching point	TP31 (AUDIO) TP17 (SERVO)	R241 R243	–	PB	1) Connect CH-1 of a dual-trace oscilloscope to TP17 (SERVO) and CH-2 to TP31 (AUDIO). Trigger the oscilloscope with the signal from TP17 (D. FF). 2) Adjust R241 to set the time difference between the rising edges of the waveforms to 13.3 ms, as indicated in the figure. 3) Adjust R243 to set the time difference between the falling edges of the waveforms to 13.3 ms, as indicated in the figure.

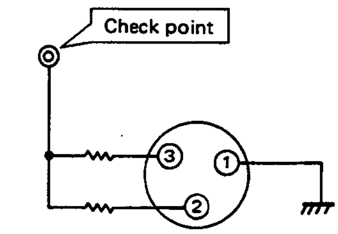


No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
12	FM audio PB level	AUDIO OUT ⬇ Audio Level Meter	R160 (L ch) R154 (R ch)	MH-F8 1 kHz	PB	1) At initial setting, set the AUDIO OUT switch to Hi-Fi. 2) Adjust R160 and R154 for –6 dBs Hi-Fi OUT levels on L and R channels.
13	FM audio REC FM level	TP21	R161 R163	No signal	REC	1) At initial setting, set the Hi-Fi REC switch to ON. 2) Connect the oscilloscope to TP21. 3) Turn R161 fully counterclockwise, as viewed from the parts side of the board. 4) Temporarily adjust R163 to set level B (see figure) to the area of 1.9 Vp-p. 5) Adjust R161 to set level A to 0.6 V. 6) Fine-adjust R161 and R163 to where levels A and B conform to the specifications indicated in the table. - - - - - - - - - - - - - - - - 7) Use S-VHS (180-minute) tape. 8) At initial setting, set the Hi-Fi REC switch to ON and the REC MODE switch to S-VHS. 9) Confirm that levels A and B conform to the specifications indicated in the table.



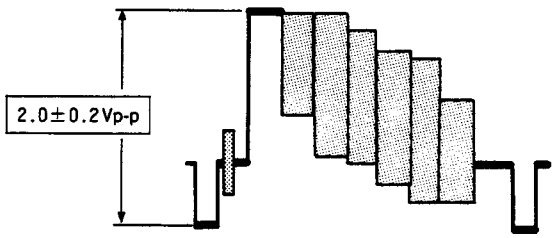
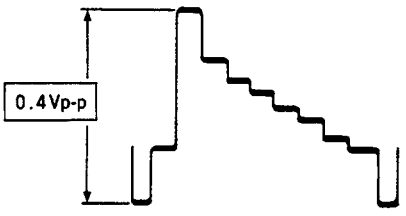
[500 mV/DIV, 0.2 μsec/DIV]

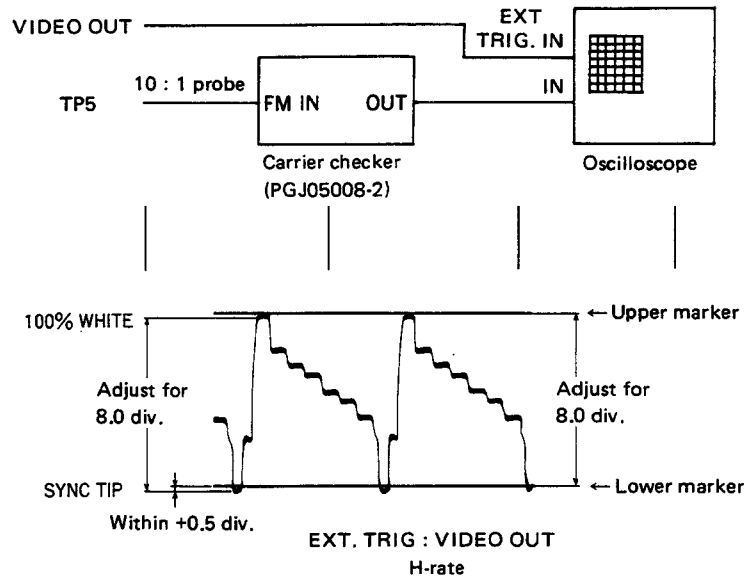
REC mode	Check point	A (specified)	B (specified)
VHS	TP21	0.6 Vp-p	2.5 Vp-p
S-VHS	TP21	0.50 ± 0.05 V	2.0 ± 0.2 Vp-p

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
14	FM audio REC/PB level	AUDIO OUT (600-ohm termination) ⬇ Audio level meter	R159 (L ch) R153 (R ch)	1 kHz/–6 dBs	REC ↓ PB	1) At the initial setting, set the Hi-Fi REC switch to ON and the AUDIO OUT switch to Hi-Fi. 2) Record and play back a 1 kHz/–6 dBs signal. 3) Confirm Hi-Fi OUT levels of –6 ± 0.5 dBs for both L and R channels (channel difference within 0.5 dB). If out of specification, perform checks of item 12. 4) Adjust L channel with R159 and R channel with R153. 5) Again record and play back. Repeat this adjustment until specification is met. - - - - - - - - - - - - - - - - 6) Use S-VHS tape. 7) At the initial setting, set the Hi-Fi REC switch to ON and the AUDIO OUT switch to Hi-Fi. Set the REC MODE switch to S-VHS. 8) Record and play back a 1 kHz/–6 dBs signal. 9) Confirm Hi-Fi OUT levels of –6 ± 1.0 dBs for both L and R channels (channel difference within 1.0 dBs).
15	Audio output BALANCE	AUDIO OUT (XLR PWB) ⬇ Audio Level Meter	R76 (L ch) R88 (R ch) (XLR PWB)	1 kHz/–2 dBs ⬇ AUDIO INPUT (XLR)	E-E	1) From initial setting, set the AUDIO INPUT SELECT switch to CAM. 2) Adjust R76 and R88 so that AUDIO OUT level become minimum.  300 Ω (± 0.1%) x 2

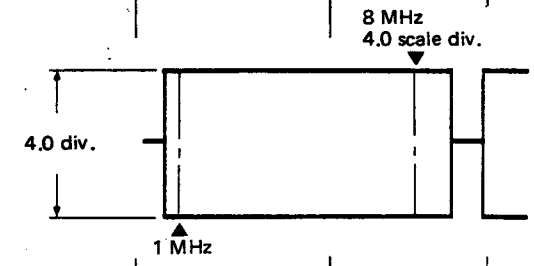
3.5 VIDEO CIRCUIT

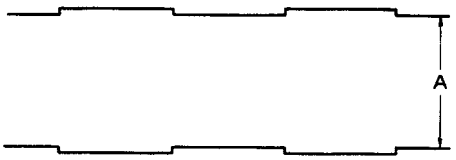
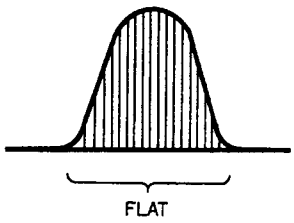
Notes: 1) Before adjusting, set power ON and allow at least 5 minutes warm-up.
2) Unless otherwise mentioned, check points and adjustments are on the VIDEO board.
3) When S-VHS is specified, use 180-minute S-VHS tape and set the rear panel REC MODE switch to S-VHS.
4) When VHS is specified, use 180-minute VHS tape and set thr rear panel REC MODE switch to VHS.

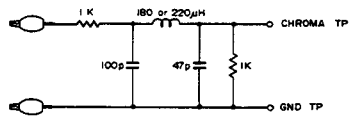
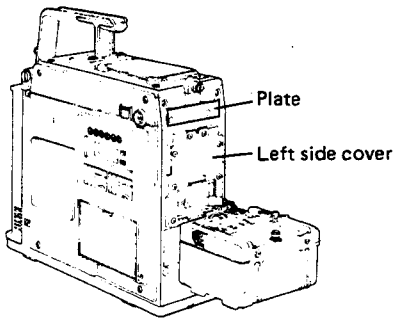
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	E-E video out level	VIDEO OUT (75-ohm termination) Y level : 1.00 ± 0.05 Vp-p Burst level : 0.300 ± 0.05 Vp-p	R167 R129	Color bars	E-E	1) Connect the oscilloscope to VIDEO OUT. 2) Adjust R167 to set the Y level to 1.0 Vp-p. 3) Set the oscilloscope to DC mode and adjust R129 to set the burst level to 0.300 Vp-p.
2	E-E Y output level	Y OUT (75-ohm termination) Y level : 1.00 ± 0.5 Vp-p	–	Color bars	E-E	1) Connect the oscilloscope to Y OUT. 2) Confirm output level of 1.0 ± 0.5 Vp-p.
3	E-E return Y level	TP23 Y level : 1.00 ± 0.05 Vp-p	R213	Color bars	E-E	1) Connect the oscilloscope to TP23. 2) Adjust R213 for 1.0 Vp-p output level.
4	RF video level	TP30 	–	Color bars	E-E	1) Connect the oscilloscope to TP30. 2) Confirm level of 2.0 ± 0.2 Vp-p.
5	REC process input level	TP7 	R35	Color bars	E-E	1) Adjust R35 for 0.4 Vp-p input level at TP7.
6	Limiter balance	TP26 ⬇ Digital voltmeter TP26 : 3.48 ± 0.05 VDC	R43	No signal	E-E	1) Connect a digital voltmeter to TP26. 2) Adjust R43 for 3.48 ± 0.05 VDC.

<table>
<tr><th>No.</th><th>Item</th><th>Check Point</th><th>Adjustment Parts</th><th>Signal</th><th>Mode</th><th>Description</th></tr>
<tr><td>7</td><td>Carrier and deviation</td><td>TP5 : S-VHS</td><td>R52</td><td>Color bars</td><td>E-E</td><td>Note: Carrier checker (PGJ05008-2) is needed for this adjustment.
1) Connect the carrier checker and oscilloscope as indicated in the figure.
• S-VHS mode
2) Connect the carrier checker to TP5 and set the checker switch to S-VHS.
3) Adjust to set 8 scale divisions on the oscilloscope between the upper and lower markers.
4) Confirm that the sync tip is within ±0.5 scale division of the lower marker.
Adjust R52 so that level difference between 100% white and sync tip is 8.0 scale divisions at that time. (Deviation : 1.6 MHz)</td></tr>
<tr><td colspan="6"> 
</td></tr>
<tr><td></td><td></td><td>TP1 : VHS</td><td>–</td><td>Color bars</td><td>E-E</td><td>• VHS mode
6) Connect the carrier checker to TP1 and set the checker switch to NORMAL VHS.
7) Adjust for 5 scale divisions between the upper and lower markers.
8) Confirm that the sync tip is within ±0.5 scale division of the lower marker.
9) Confirm that 100% white is within ±0.5 scale division of the upper marker.</td></tr>
<tr><td colspan="6"><table>
<tr><th rowspan="2">Mode</th><th colspan="2">Carrier</th><th rowspan="2">Deviation</th></tr>
<tr><th>Sync tip</th><th>100% white</th></tr>
<tr><td>S-VHS</td><td>5.4 MHz</td><td>7.0 MHz</td><td>1.6 MHz</td></tr>
<tr><td>VHS</td><td>3.8 MHz</td><td>4.8 MHz</td><td>1.0 MHz</td></tr>
</table></td></tr>
<tr><td></td><td></td><td>TP2</td><td>–</td><td>MHVE-2H</td><td>PB</td><td>• When a carrier checker is unavailable, perform adjustment in the following manner.
1) Connect the oscilloscope to TP2.
2) Play back MHVE-2H alignment tape in the SP mode.
3) By turning the oscilloscope's VARIABLE knob, adjust the Y level of TP2's waveform to be 6 scale divisions.</td></tr>
<tr><td></td><td></td><td></td><td>R52</td><td>Color bars</td><td>REC
⬇
PB</td><td>4) Record the color bar signal and play it back (S-VHS mode).
5) Confirm that the level of TP2's waveform is 6 scale divisions.
6) If not, turn R52 to adjust the level.
7) Repeat the above steps 4) through 6) until the level of TP2's waveform becomes 6 scale divisions.</td></tr>
</table>

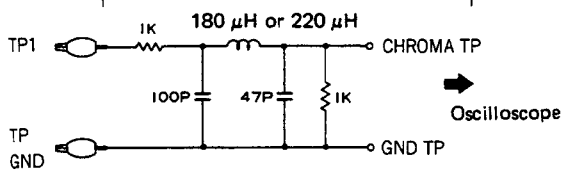
<table>
<tr><th>No.</th><th>Item</th><th>Check Point</th><th>Adjustment Parts</th><th>Signal</th><th>Mode</th><th>Description</th></tr>
<tr><td>8</td><td>PB color channel difference temporary adjustment</td><td>TP9
(COLOR PWB)</td><td>R15
(V. PRE PWB)</td><td>MHVE-2H</td><td>PB</td><td>1) Play color bar signal of MHVE-2H alignment tape.
2) Connect external trigger of oscilloscope to TP35.
3) Adjust R15 to equalize the chroma levels of CH1 and CH2.
4) R15 is adjusted again in the item 14.</td></tr>
<tr><td>9</td><td>Head resonance</td><td colspan="5">• Preparation and Precaution
(1) Disconnect two cables from CN3 of the SYSCON board and CN10 of the SERVO board temporarily, and connect them to CN2 and CN4 of the mode setting device (PGJ05031) respectively. Next, connect wires of CN1 and CN3 of the mode setting device to CN3 of the SYSCON board and CN10 of the SERVO board.
(2) Use such a sweep signal as its sweep width is between 8.5 MHz and 1 MHz or less without sync, but its 1 MHz and 8 MHz signals must have markers.</td></tr>
<tr><td></td><td></td><td>TP25</td><td>R21
C24
(V. PRE PWB)</td><td>Sweep signal</td><td>STOP</td><td>• CH-1 head
1) Set the mode setting device's switch to "CH-1".
2) Terminate the output of the sweep generator with a coil of 1 mH or so, and set the coil near the video head.
3) Rotate the upper drum by hand and stop it when the level of TP25's waveform is maximum. (External synchronization of the oscilloscope can be realized by using the sweep generator's trigger output.)
4) Adjust the level of the 1 MHz signal so that it becomes 4 scale divisions on the oscilloscope screen.
5) Adjust R21 and C24 alternately so that the level of the 8 MHz signal is 4.0 scale divisions and the waveform is flat.</td></tr>
<tr><td></td><td></td><td>R20
C22
(V. PRE PWB)</td><td>Sweep signal</td><td>STOP</td><td>• CH-2 head
6) Set the mode setting device's switch to "CH-2".
7) In the same manner as for CH-1 head, alternately adjust R20 and C22 so that the level of 8 MHz signal is 4.0 scale divisions.</td></tr>
</table>

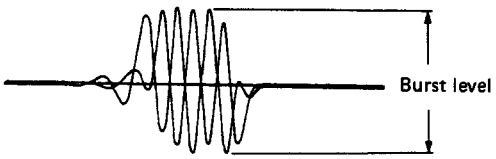


No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
10	REC FM level (FMA REC/PB, RF Level check)	TP24 TP20 (AUDIO PWB)	R87 : S-VHS R79 : VHS	Color bars (VIDEO IN) NO signal (AUDIO IN)	REC	1) Trigger the oscilloscope externally with the signal from TP35. • **S-VHS mode** 2) Adjust R87 to set the TP24 pedestal to 4.0 Vp-p. • **VHS mode** Hi-Fi REC SW : ON 3) Tuner R79 to set the pedestal level at TP24 to 3.5 Vp-p.
		 A : S-VHS = 4.0 Vp-p VHS = 3.5–3.0 Vp-p			REC ⬇ PB	4) Confirm more than 110 mVp-p, level at AUDIO PWB TP20. 5) If less than 110 mVp-p, slightly reduce the TP24 level with R79. Again measure Audio PWB TP20. 6) However, do not set the TP24 level for less than 3.0 Vp-p.
11	REC Y/C delay	TP7 TP9	R97	Pulse/Bar signal (20T)	REC	• **S-VHS mode** 1) Set dual-trace oscilloscope to ADD mode and connect to TP7 and TP9. 2) Adjust R97 to set the 20T pulse lower perimeter as flat and symmetrical as possible.
						
		TP2 TP29	R108	Pulse/Bar signal (20T)	REC	• **VHS mode** 3) Set dual-trace oscilloscope to ADD mode and connect to TP2 and TP29. 4) In the same manner as step 2, adjust R108.

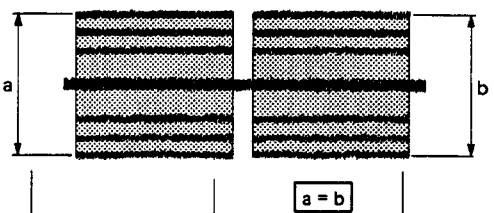
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
12	S-VHS Side-band	TP1 (AD REC PWB)	R8 (AD REC PWB)	3.9 MHz sinwave	REC	**Note:** If you can make such a filtering device as shown below, this adjustment can easily be performed only by removing the plate on the left side cover.   1) Connect the filtering device and the oscilloscope as shown on the left. **Note:** When such the filtering device is unavailable, connect the oscilloscope to pin 7 of IC1 of the AD REC board. 2) Set the REC MODE switch to "VHS" mode. 3) Record the sinwave (3.9 MHz) 4) Adjust the burst level of the above signal to be 5.0 scale divisions on the oscilloscope screen. 5) Next, change the set position of the REC MODE switch to "S-VHS" mode, and record the same signal. 6) Adjust R8 so that the burst level of the above step becomes 4 scale division. **Note:** 1) When adjusting R8, turn it fully clockwise as viewed from the pattern side beforehand. Then, gradually turn it counterclockwise, and set it when the measured value meets the specification for the first time. (There are two points where it meets the specification.)

Connection of filtering device

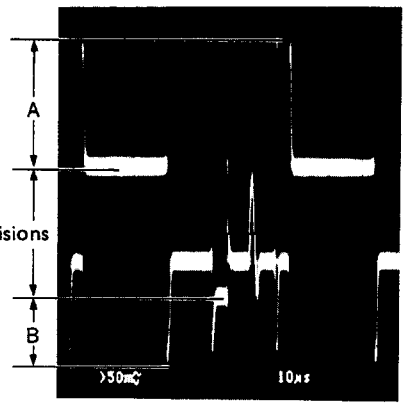


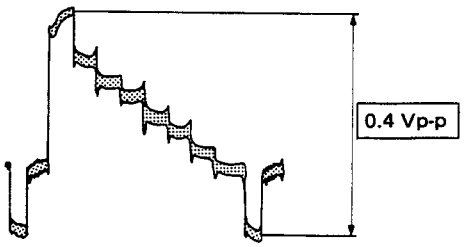


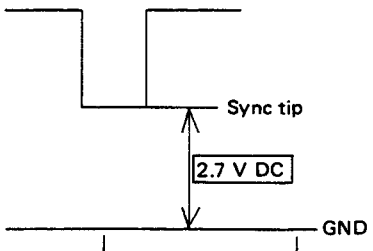
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
13	REC/PB color level	TP9 (COLOR PWB)	R46 (VIDEO-2 PWB)	MHVE-2H	PB	• **S-VHS mode** 1) Trigger the oscilloscope externally with the signal from TP35. Set slope to (–). 2) Adjust the Tracking control for the optimum point. 3) In SP mode, play the color bar signal of the MHVE-2H alignment tape. 4) Set the TP9 playback level to 4.0 scale divisions on the oscilloscope.
				Color bars	REC ⬇ PB	5) Use a spare tape, record and playback a color bar signal. 6) Set the Tracking control to the center detent position. Record and play back and adjust R46. Repeat this process until TP9 level is 5 scale divisions. **Notes:** • Confirm maximum FM waveform at the detent position of the Tracking control. If not maximum, perform control head phase adjustment (section 2.6.6). • If there is channel difference, adjust at the larger level. • Confirm that smaller level is greater than 4.5 scale divisions (channel difference within 1 dB).
			R47 (VIDEO-2 PWB)	MHVE-2	PB	• **VHS mode** 7) Play color bar signal of the MHVE-2 alignment tape. Set the Tracking control to the optimum point. 8) Set the TP9 playback level to 5 scale divisions on the oscilloscope.
				Color bars	REC ⬇ PB	9) Use spare tape, record and play back a color bar signal. 10) Set Tracking control to the center detent position. Adjust R47, record and play back. Repeat until the TP9 level is 4.5 scale divisions. **Note:** If channel difference, adjust for the larger level.
14	REC/PB color channel difference	TP5 (COLOR PWB)	R15 (V. PRE PWB)	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Trigger the oscilloscope externally with the signal from TP35. 2) Set Tracking control to the center detent position. 3) Adjust R15 to equalize CH1 and CH2 levels. 4) This completes adjustment of R15.

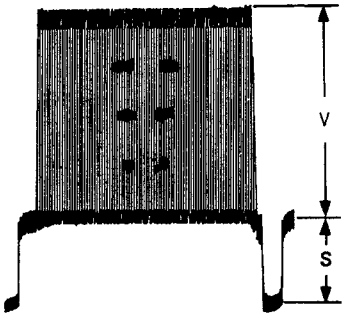


No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
15	White and dark clip	TP52	–	Pulse/Bar signal (20T)	E-E	• **VHS mode** 1) Connect the oscilloscope to TP52. Adjust the oscilloscope to set 4.0 scale divisions between the sync tip and 100% white. 2) Confirm that levels A and B (see figure) are as follows. A (white clip): 3.5 to 3.9 scale divisions (192 ± 5 %) B (dark clip) : 1.6 to 2.0 scale divisions (45 ± 5 %)
		TP53	–	Pulse/Bar signal (20T)	E-E	• **S-VHS mode** 3) Connect the oscilloscope to TP53. Adjust in the same manner as step 1. 4) Confirm that levels A and B are as follows. A (white clip): 4.0 to 4.8 scale divisions (210 ± 10 %) B (dark clip) : 2.4 to 3.2 scale divisions (70 ± 10 %)
16	PB process input level	TP7	R20	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Adjust R20 to set TP7 level to 0.4 Vp-p.
17	CCD bias	TP28	R189	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Adjust R189 to set DC level of the sync tip to 2.7 V DC.

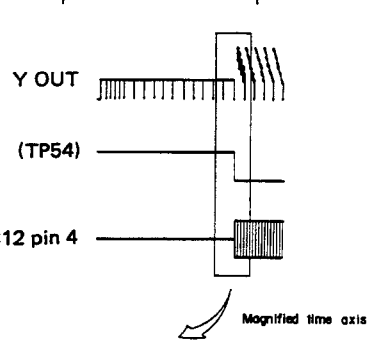


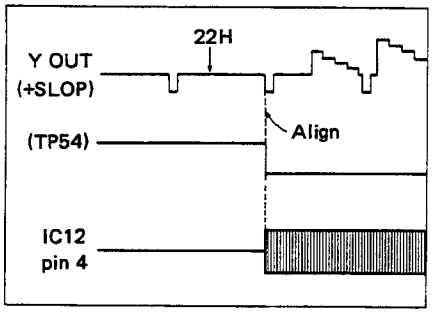


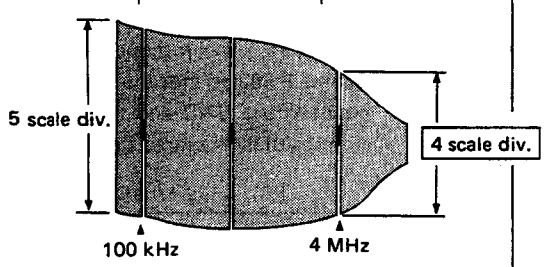


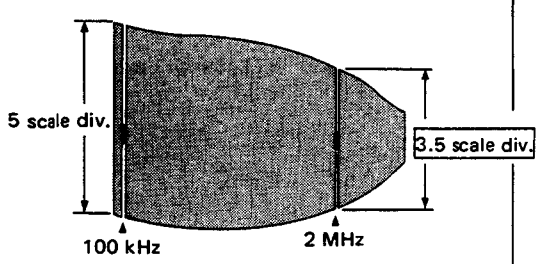
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
18	Video out V/S ratio	TP27 TP20 Y OUT (75-ohm termination)	R196 R417 R258	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Turn R196 to set TP27 level to maximum. 3) Turn R417 counterclockwise (as viewed from pattern side of board) for minimum level. **Note:** Output ceases if turned too far (min. level approx. 0.9 Vp-p). 4) Adjust the oscilloscope to set the TP20 playback level to 5.0 scale divisions. 5) Adjust R196 to set the TP27 playback level to 5.0 scale divisions. 6) Measure Y OUT level with the oscilloscope and adjust R258 for 1.0 Vp-p. 7) Record and play back. 8) Adjust R417 to set the video to sync ratio at Y OUT to V : S = 7 : 2.9–3.0.
				Monoscope or 100% White	REC ⬇ PB	
		V : S = 7 : 2.9–3.0				
19	DOC level	TP20 TP27	R196	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Set the TP20 playback level to 5.0 scale divisions on the oscilloscope. 3) Adjust R196 to set the TP27 level to 5.0 scale divisions.
20	DOC DC balance	IC23 pin 1 IC23 pin 6	R562	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record the color bars signal and play it back. 2) Connect the oscilloscope to pin 1 of IC23. 3) Measure voltage between the sync tip and GND. 4) Connect the oscilloscope to pin 6 of IC23. 5) Adjust R562 so that the voltage measured between the GND and the sync tip is the same as that measured in the step 3).
		DC voltage at pin 1 of IC23 = DC voltage at pin 6 of IC23				
21	REC/PB video out level	Y OUT (75-ohm termination) VIDEO OUT (75-ohm termination)	R258 R246	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Connect the oscilloscope to Y OUT. 2) Adjust R258 for 1.0 Vp-p Y level. 3) Connect the oscilloscope to VIDEO OUT. 4) Adjust R246 for 1.0 Vp-p Y level.
		VIDEO OUT (75-ohm termination)	R17	Color bars	REC ⬇ PB	• **VHS mode** 5) Adjust R17 for 1 Vp-p level at VIDEO OUT.

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
22	Noise cancel OFF pulse width	Y OUT IC12 pin 4 (TP54)	R54	Color bars	REC ⬇ PB	1) Connect the oscilloscope to Y OUT and IC12 pin 4. 2) Trigger the oscilloscope externally with signal from TP35. (+ slope) 3) Record the color bars signal in S-VHS mode and play it back. 4) Adjust R54 so that the falling point of TP38's pulse coincides with the falling point of the 22H V. blanking pulse.
23	REC/PB frequency response	Y OUT (75-ohm termination)	R144	Sweep signal	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a sweep signal. 2) Trigger the oscilloscope externally with the signal from TP35. 3) Adjust the oscilloscope to set the 100 kHz level of the waveform at Y OUT to 5.0 scale divisions. Then adjust R144 to set the 4 MHz level to 4 scale divisions. **Notes:** • If channel difference, adjust for the larger level. • With larger level at 4.0 scale divisions, confirm smaller level is greater than 3.6 scale divisions (−1 dB).
			R153	Sweep signal	REC ⬇ PB	• **VHS mode** 4) In the same manner, adjust R153 to set the 2 MHz level to 3.5 scale divisions. **Notes:** • If channel difference, adjust for the larger level. • With larger level at 4.0 scale divisions, confirm smaller level is greater than 3.6 scale divisions (−1 dB).

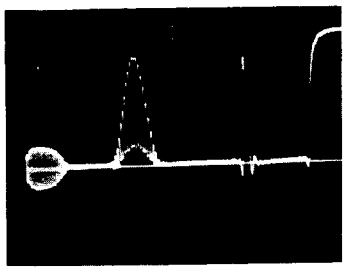
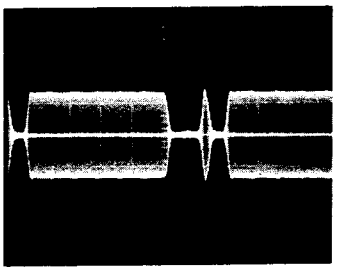




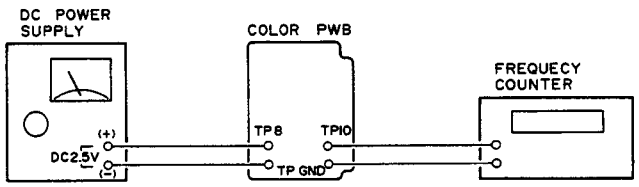


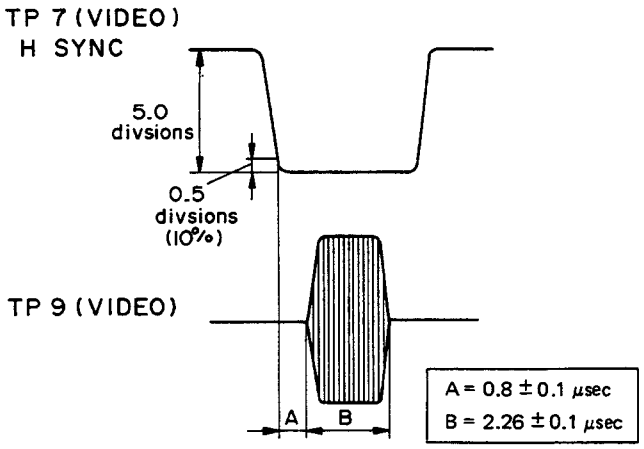


No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
24	2H delay bias	TP1 TP2 (PB COMB PWB)	R2 R10 (PB COMB PWB)	Color bars	REC ⬇ PB	1) Connect the oscilloscope to TP1 (TP2). 2) Adjust R2 to set the TP1 DC level of the sync tip to 2.7 VDC. 3) Adjust R10 to set the TP2 DC level of the sync tip to 2.5 VDC.
25	Comb filter	TP3 (PB COMB PWB)	R18 R22 (PB COMB PWB)	Stairstep	REC ⬇ PB	• **S-VHS mode** INPUT SELECT : Y/C 443 1) Supply the stairstep signal to pin 1 of Y/C 443 INPUT connector. (Pin 2 : GND) 2) Connect the oscilloscope to TP3 and observe the waveform at H-rate. 3) Adjust R18 to shape the waveform at TP3 to by symmetrical with respect to the horizontal center line. 4) Adjust R22 to minimize and symmetrize serrations of the waveform on the upper and lower sides. **Note:** The PB COM board can be adjusted and observed even if it is removed from the COLOR board.
26	Noise cancel (Comb filter)	TP19	R239	Color bars (Color level is attenuated by 90%.)	REC ⬇ PB	• **Signal generator with adjustable color level** 1) Set the INPUT SELECT switch to "Y/C 443". 2) Input the color bars signal whose color level is attenuated by 90% (10% level) to the Y/C IN Y terminal (pin 1). 3) Record the color bars signal in S-VHS mode and play it back. 4) Connect the oscilloscope to TP19. 5) Adjust R239 so that the residual chroma component in the 3rd step from the top of the color bars is miminized. **Note:** The PB COMB board can be adjusted signals to any input terminal such as BNC IN, Y/C IN, etc.
		VIDEO OUT (75-ohm termination) ⬇ Video noise meter	R239	50% WHITE (without Burst) ⬇ Y IN	REC ⬇ PB	• **Video noise meter is used for this adjustment.** 1) Adjust R239 so that noise level becomes minimum.

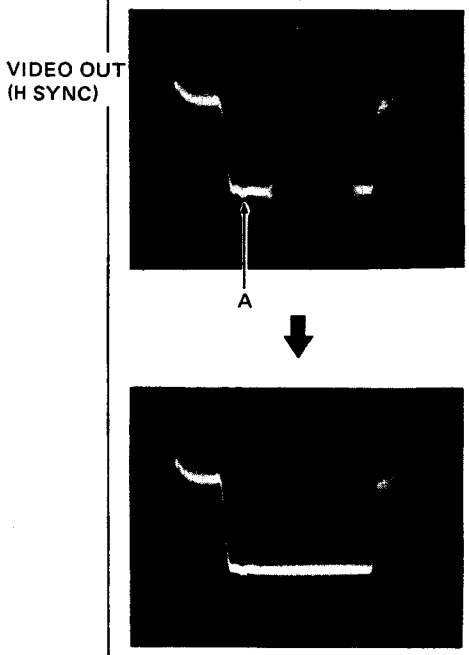
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
27	REC/PB Y/C delay	VIDEO OUT (75-ohm termination) 	R108 (COLOR PWB) R112 (COLOR PWB)	Pulse/Bar signal (20T)	REC ⬇ PB	• **S-VHS mode** 1) Record and play back 20T pulse. 2) Adjust R108 to set the 20T pulse lower perimeter as flat as possible. 3) If flatness cannot be obtained, adjust for left and right symmetry from center. • **VHS mode** 4) Repeat above steps, but adjust R112. **Note:** If adjustment is difficult, adjust R44 of the COLOR board.
28	DG com- pensation	VIDEO OUT (75-ohm termination) ⬇ Waveform monitor 	R119 (COLOR PWB) R120 (COLOR PWB)	Stairstep (Modulated 5 steps)	REC ⬇ PB	1) Connect a waveform monitor to VIDEO OUT (CHROMA mode: 4.43 MHz BPF). • **VHS mode** 2) Record and play back 5-step stairstep with overlapped subcarrier. 3) Adjust R119 for flat color signal envelope. • **S-VHS mode** 4) Repeat above steps, but adjust R120. **Note:** If waveform monitor is not available, connect oscilloscope to Y OUT.

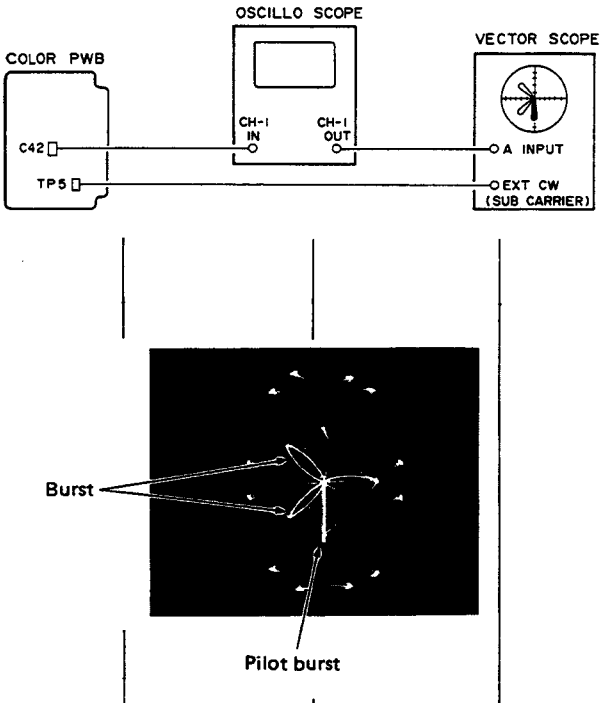
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
29	VXO	TP5 (COLOR PWB) ⬇ Frequency counter	C54 (COLOR PWB)	MHVE-2H (Color bars)	PB	1) Play the color bar signal of the MHVE-2H alignment tape. 2) Connect the frequency counter to TP5. 3) Adjust C54 for 4,433,619 ± 50 Hz.
30	VCO	TP10 (COLOR PWB)	R61 (COLOR PWB)	No signal	E-E	1) Supply 2.5 V DC to the line between TP8 and TP GND from a regulated DC power supply unit. 2) Connect the frequency counter to TP10. 3) Adjust R61 for 5.015 ± 0.05 MHz.
31	Pilot burst width & position	TP7 TP9	R5 R10 (COLOR SUB PWB)	Color bars	REC	• **S-VHS mode** 1) Connect CH-1 of a dual-trace oscilloscope to TP7 and CH-2 to TP9. 2) Adjust R5 so that a 1/10 level of point of the fall of H. sync at TP7 delays 0.8 ± 0.1 μsec against the pilot burst at TP9. 3) Adjust R10 so that the pilot burst width at TP9 becomes 2.26 ± 0.1 μsec.



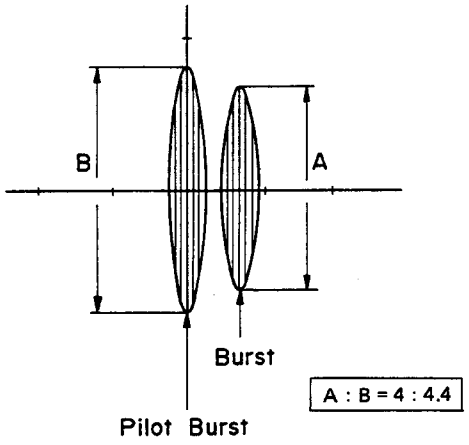


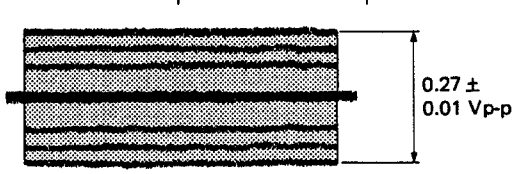
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
32	Pilot burst cancel	VIDEO OUT (75-ohm termination)	R1 R7 (COLOR SUB PWB)	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Use spare tape, record and play back a color bar signal. 2) Turn R7 fully counter clockwise (viewed from the pattern side). 3) Adjust R1 so that the start point of the pilot burst signal coincides with the point A of the H. sync signal. 4) Adjust R7 to erase the waveform of the pilot burst signal on the oscilloscope.
33	Pilot burst phase	TP5, C42 (COLOR PWB)	R52 (COLOR PWB)	Color barst	REC	**S-VHS mode** 1) Connect the oscilloscope's CH-1 IN terminal to C42 for amplification, while connect its CH-1 OUT terminal to the vectorscope's INPUT terminal. 2) Connect the vectorscope's EXT. CW terminal and TP5 (REF. 4.43 MHz). 3) Use the vecorscope's PHASE VR to adjust the burst phase for the normal. At this time, adjust the burst level for convenience of the adjustment with the GAIN VR of the vectorscope. 4) Adjust R52 so that the pilot burst phase becomes 270 ± 5°.

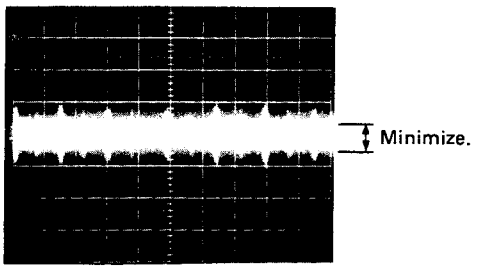
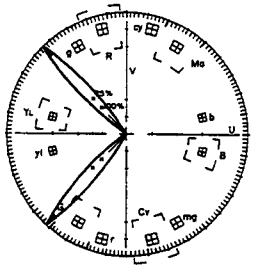
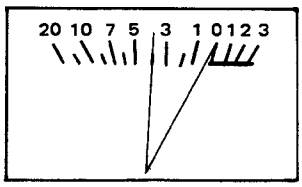




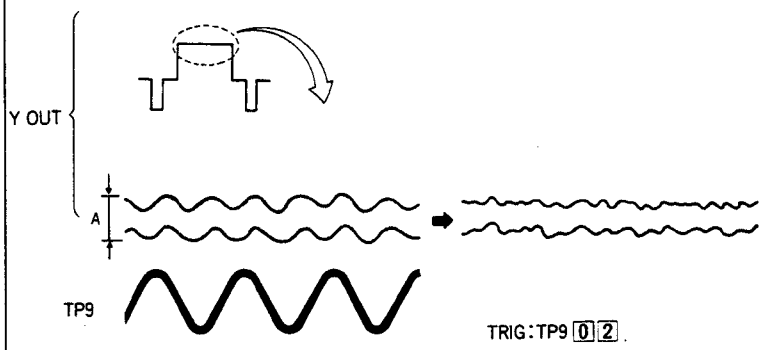
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
34	Pilot burst level	TP9	R51 (COLOR PWB)	Color bars	REC	• **S-VHS mode** 1) Connect the oscilloscope to TP9. Adjust the oscilloscope to set the burst level to 4.0 scale divisions. 2) Adjust R51 to set the pilot burst level to 4.4 scale divisions (110%).
35	CNR input level	TP2 (COLOR PWB)	R32 (COLOR PWB)	Color bars	REC ↓ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Adjust R32 for 0.27 ± 0.01 Vp-p at TP2.

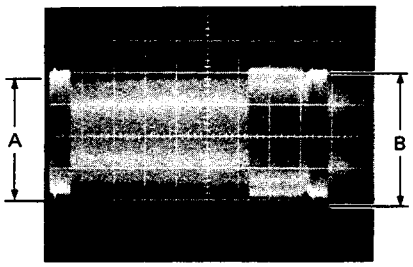




No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
36	CNR NR balance	TP4 (COLOR PWB) 	R38 (COLOR PWB) L6 (COLOR PWB)	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record and play back a color bar signal. 2) Adjust R38 and L6 to minimize the 4.43 MHz component at TP4.
37	REC/PB color level	VIDEO OUT (75-ohm termination) ⬇ Vectorscope 	R44 (COLOR PWB)	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Record the colour bars signal and play it back. 2) With input of the reference colour bars signal (EBU75%) to a vectorscope, adjust the vectorscope's GAIN control so that burst level crosses the scope's circumference. 3) Change the input signal to the vectorscope from the reference colour bars signal to PB signal from the Y/C443 OUT. 4) Adjust R44 to equalize level of the luminous point of the burst signal with the level of the reference colour bars signal.
38	Tracking meter	Tracking meter 	R411	Color bars	REC ⬇ PB	• **S-VHS mode** 1) Set the METER SELECT switch to TRACKING and set the Tracking control to center detent. 2) Record and play back a color bar signal. 3) Adjust R411 so that indicator reads just 1 of the scale. • **VHS mode** 4) Confirm the indicator between 0 and 4 of the scale. (See figure)

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
39	Noise canceller	Y OUT (75-ohm termination)	R9 (AD REC PWB)	100% Chroma	REC ⬇ PB	• **S-VHS mode** 1) Trigger the oscilloscope externally with signal of TP9 of the COLOR board. 2) Record the blue signal and play it back. 3) Measure the level "A" shown in the figure on the left. 4) Change the set position of R9 and record the blue signal again to measure the level "A" by playing it back. 5) Repeat the steps 2), 3) and 4) and finally set R9 with the minimum value of the level "A" obtained. **Reference:** When it is difficult to judge the minimum point of the level "A" through the above steps, record the signal as R9 is turned slowly and play it back to measure approximate value of the level "A".
		Same as above	R10 (AD REC PWB)	Same as above	REC ⬇ PB	• **VHS mode** 6) In VHS mode, use R10 for adjustments of the above steps 2) through 5).
40	Video PB FM level	TP25	–	Color bars	REC ⬇ PB	• **VHS mode** 1) Trigger the oscilloscope externally with the signal from TP35. 2) Record and play back a color bar signal. 3) Confirm TP25 level of 0.385 to 0.415 Vp-p. **Note:** If channel difference, confirm for the lower level. • **S-VHS mode** 4) Similarly, confirm TP25 level of 0.30 to 0.6 Vp-p.





In case of A > B

VHS : B = 0.385–0.415 Vp-p
S-VHS : B = 0.3–0.6 Vp-p

3.6 SYSCON CIRCUIT

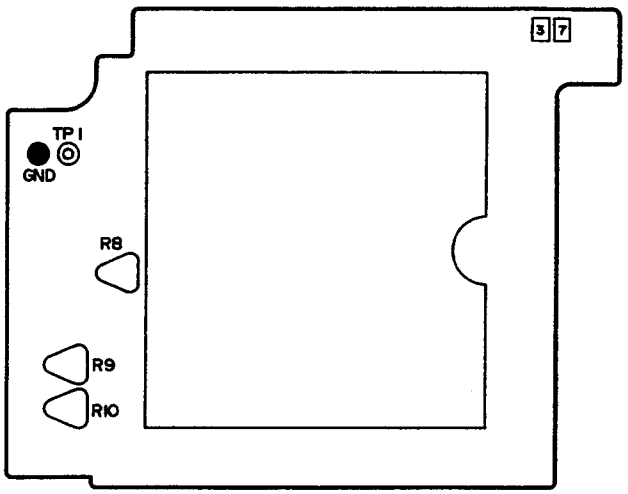
Note: This adjustment requires a variable 12 V DC power source.

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	Battery down indicator	TP4 (REG)	12 VDC INPUT power source	Color bars	REC	1) Connect a digital voltmeter to REGULATOR board TP4 (+), connect ground to the shield case. 2) Adjust power source for 10.3 ± 0.05 V.
		TP3 (SYSCON)	R65 (SYSCON)	Color bars	REC	3) Adjust R65 so that TP3 drops from High to Low.

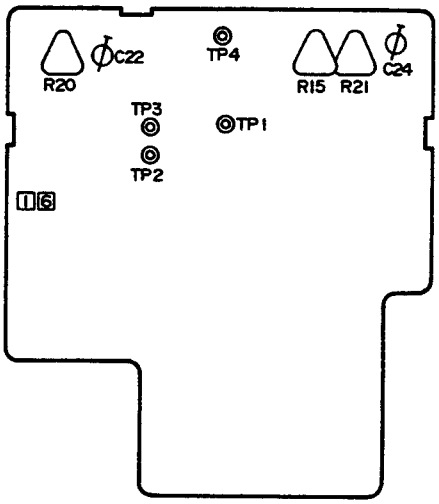
3.7 LOCATION OF TEST POINTS AND ADJUSTMENT PARTS

3.7.1 ADVANCE REC BOARD/VIDEO PRE AMP BOARD

– ADVANCE REC –

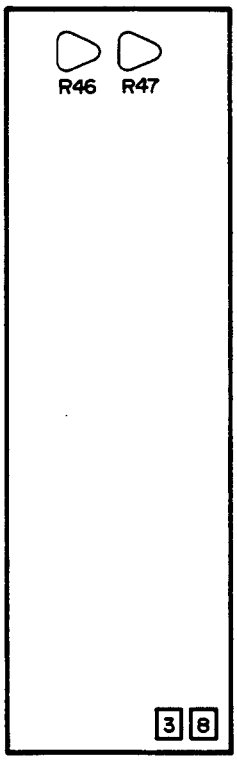


– VIDEO PREAMP –

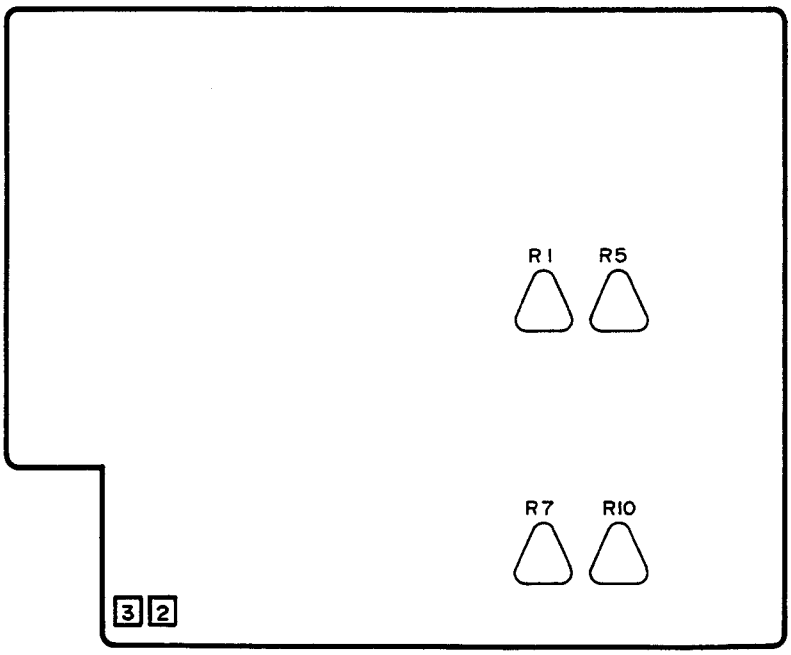


3.7.2 VIDEO (2) BOARD/COLOR SUB BOARD

– VIDEO (2) –

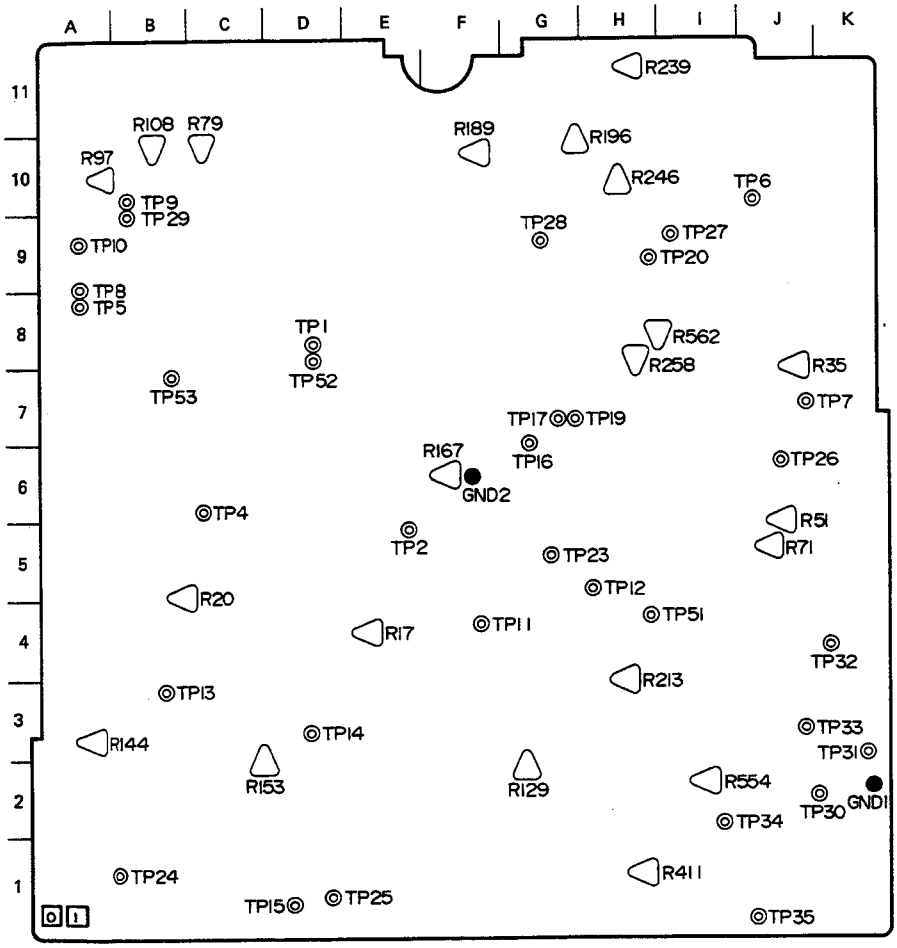


– COLOR SUB –

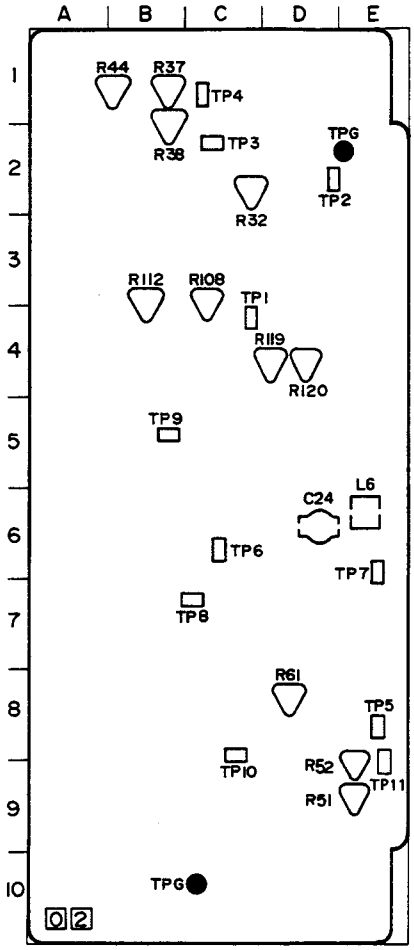


3.7.3 VIDEO BOARD/COLOR BOARD

– VIDEO –



– COLOR –



– VIDEO –

TP	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	23
Location	D8	E5	C6	A8	J9	J7	A8	B9	A9	F4	H5	B3	D3	D1	G6	G7	G7	H9	G5
TP	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	GND1	GND2		
Location	B1	D1	J6	I9	G9	B9	K2	K3	K4	J3	I2	J1	H4	D7	B7	K2	F6		

R	17	20	51	71	79	97	108	129	144	153	167	189	196	213	239	246	258	411
Location	E4	B5	J5	J5	C10	A10	B10	G2	A3	C2	F6	F10	G10	H4	H11	H10	H7	H1
R	554	562																
Location	I2	H8																

– COLOR –

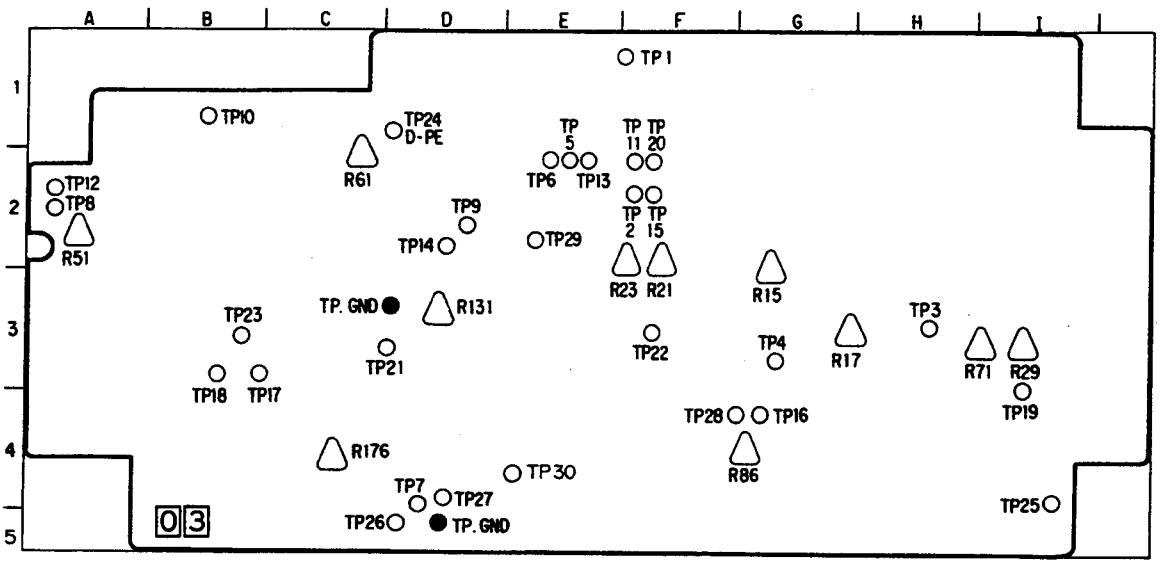
TP	1	2	3	4	5	6	7	8	9	10	11	GND	GND
Location	C4	D2	C2	C1	B8	C6	E6	C7	B5	C8	E8	C10	E2

R	32	38	44	51	52	61	108	112	119	120
Location	C2	B1	B1	E9	E8	D8	C3	B3	D4	D4

C	24
Location	D6

L	6
Location	E6

3.7.4 SERVO BOARD

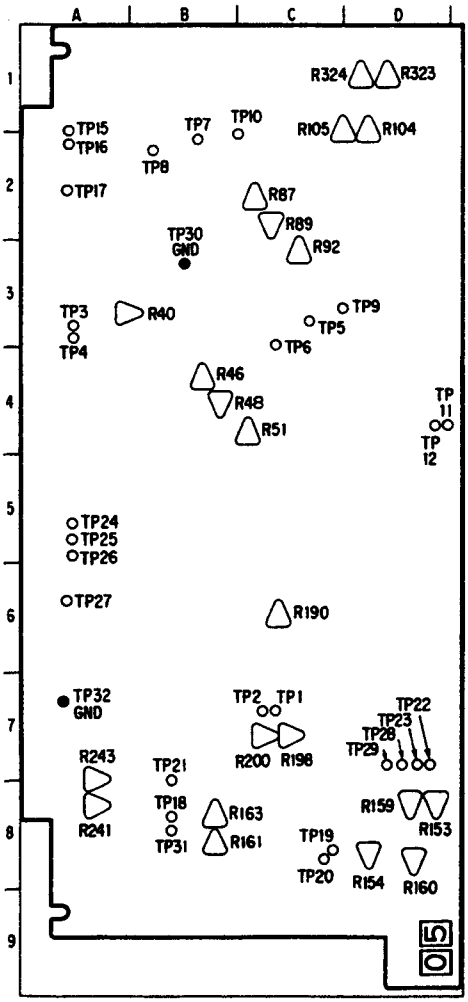


– SERVO BOARD –

TP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Location	F1	F2	H3	G3	E2	E2	D4	A2	D2	B1	F2	A2	E2	D2	F2	G4	B3	B3	I3	F2
TP	21	22	23	24	25	26	27	28	29	31	GND	GND								
Location	D3	F3	B3	D1	I4	D5	D4	G4	E2	E4	D3	D5								

R	15	17	21	23	29	51	61	71	86	131	176
Loaction	G2	H3	F2	F2	I3	A2	C2	I3	G4	D3	C4

3.7.5 AUDIO BOARD



– AUDIO BOARD –

TP	1	2	3	4	5	6	7	8	9	10
Location	C7	C7	A3	A3	C3	C3	B2	B2	C3	C1
TP	11	12	15	16	17	18	19	20	21	22
Location	D4	D4	A1	A2	A2	B8	C8	C8	B7	D7
TP	23	24	25	26	27	28	29	30	31	32
Location	D7	A5	A5	A5	A6	D7	D7	B3	B8	A7

R	40	46	48	51	87	89	92	104	105	153
Location	B3	B4	B4	C4	C2	C2	C3	D1	C1	D8
R	154	159	160	161	163	19ᵥ	198	200	241	243
Location	D8	D8	D8	B8	B8	C6	C7	C7	A8	A7
R	323	324								
Location	D1	D1								

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

4.1 KEY TO ABBREVIATIONS

A	ACC	: Automatic Color Control
	ADD	: Adder
	ADC	: Analog to Digital Converter
	ADJ	: Adjustment
	A DUB	: Audio Dubbing
	AE	: Audio Erase
	AEF	: Automatic Edition Function
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	AH	: Audio Head
	AL	: After Loading
	ALC	: Automatic Level Control
	ALM	: Alarm
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Phase Control
	APL	: Average Picture Level
	ASSEM	: Assembly
	ASS'Y	: Assembly
	ATT	: Attenuator
	AUTO	: Automatic
	AUX	: Auxiliary
	AUD	: Audio
B	B	: Brake
	BAL	: Balance
	BATT	: Battery
	BCD	: Binary Coded Decimal
	BEG	: Beginning
	BFP	: Burst Flag Pulse
	BIT	: Binary Digit
	BLK	: Black
	BLU	: Blue
	BNC	: Bayonet connector
	BPF	: Bandpass Filter
	BRN	: Brown
	BRT	: Brightness
	B. SOL	: Brake Solenoid
	B/W	: Black and White
C	C	: Ceramic
	CAP	: Capstan
	CASS	: Cassette
	CF	: Ceramic Filter, color Frame
	CC	: Cassette compartment
	CE	: Chip Enable
	CH	: Channel
	CHROMA	: Chrominance
	CLK	: Clock
	CLR	: Clear
	CMD	: Command
	CNT	: Count, Counter
	CONV	: Converter
	COL	: Color
	COM	: Common
	COMP	: Comparator Composite Compensation
	CONN	: Connector
	CT	: Ceramic Trap
	CTC	: Crosstalk Cancel
	CTL	: Control
D	D	: Drum
	DAC	: Dighta1 to Analog Converter
	DD	: Direct Drive
	DEC	: Decoder
	DEMOD	: Demodulator
	DET	: Detector
	DEV	: Deviation
	DFRS	: Drum Free RUN STOP
	DIF TRANS	: Differential Transformer
	DISCR	: Discriminator
	DL	: Delay Line
	DOC	: Dropout Compensator
	DRUM FF	: Drum Flip Flop
	DUB	: Dubbing
E	E	: Edit, Erase
	EDP	: Electronic Data Processing
	E-E	: Electric to Electric
	EF	: Emitter-Follower
	EMPHA	: Emphasis
	EMG	: Emergency
	ENC	: Encoder
	EN	: Enable
	EQ	: Equalizer
	ESNS	: End Sensor
	EXP	: Expander
	EXT	: External
F	FE	: Full Erase
	FF	: Fast Forward Flipflop
	FG	: Frequency Generator
	FM	: Frequency Modulation
	FMA	: FM Audio
	FREQ	: Frequency
	F-V CONV	: Frequency to Voltage Converter
	FWD	: Forward
G	GDL	: Grass Delay Line
	GEN LOCK	: Generator Lock
	GND	: Ground
	GRN	: Green
	GRY	: Gray
H	H	: High, Horizontal
	HG	: Hall Generator
	HPF	: Highpass Filter
I	IF	: Intermediate Frequency
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: Inverter
	I/O	: Input/Output
L	L	: Low
	LB	: Low Band
	LCD	: Liquid Crystal Display
	LE	: Loading End
	LED	: Light Emitting Diode
	LIN	: Linearity
	LIM	: Limiter
	LOAD	: Loading
	LP	: Long Play
	LPF	: Lowpass Filter
	LT	: Loading Tension
M	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer
	MM	: Monostable Multivibrator
	MOD	: Modulator
	MON	: Monitor
	MOS	: Metal Oxide Semkonductor
	MPX	: Multiplexer
	MS	: Mode Select
	MUT	: Muting
N	NC	: Noise Cancel
	NFB	: Negative Feedback
	NO	: Normally Open
O	OPAMP	: Operational Amplifier
	OP	: Operation
	ORN	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler
	PCM	: Pulse Code Modulation
	PGM	: Program
	PG	: Pulse Generator
	PI	: Photo Interrupter
	PLL	: Phase Locked Loop
	POS	: Position
	PR	: Pinch Roller
	PREV	: Preview
	PRL	: Preroll
	PU	: Pickup
	PWB	: Printed Wiring Board
Q	Q	: Quality Factor
R	RA	: Resistor Array : Random Access
	RAM	: Random Access Memory
	REC	: Recording
	REG	: Regulated
	REV	: Reverse
	REW	: Rewind
	RF	: Radio Frequency
	RST	: Reset
	R/P	: Record/Playback
	RPT	: Repeat
	RT	: Rotary Transformer
	RY	: Relay
S	S	: Search, Servo
	SC	: Subcarrier
	SEAR	: Search
	SEL	: Select
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SFWD	: Search Forward
	SI	: Serial In
	SIG	: Signal
	SO	: Serial Out
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREV	: Search Reverse
	SREW	: Short Rewind
	SSG	: Sync-Signal Generator
	STL	: Still
	SUP	: Supply
	SYNC	: Synchronization
	SYSCON	: System control
T	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TDG	: Time Date Generator
	T. EALM	: Tape End Alarm
	TEN	: Tension
	TIM	: Timing
	TK	: Tracking
	TL	: Time Lapse
	TREC	: Timer Record
	TSW	: Time Switch
	TU	: Take-up
	TUR	: Take-up Reel
U	UNLD	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Video, Vertical
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VXO	: Variable Crystal Oscillator
	VLT	: Violet
	VSCH	: Variable Search
W	WHT	: White
	WV	: Working Voltage
	WARN	: Warning
X	XTL	: Crystal
Y	Y	: Luminance
	YLW	: Yellow

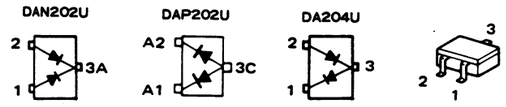
4-1

4.2 REPLACING SUBMINIATURE "CHIP" PARTS

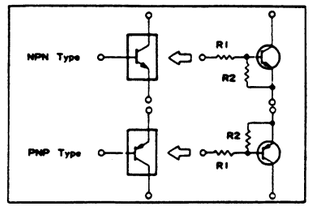
1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

   Chip transistors and diodes used in this model are outlined as follows.

- **Chip diode**



- **Digital transistor**



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA144EK	47	47
	DTA124E	22	22
NPN	DTC144EK	47	47
	DTC124EK	22	22

Note: The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	Imprinting	Type	Imprinting	Type	Imprinting
DTA124EK	15	2SD601(S)	YS	DA204K	K
DTA144EK	16	2SD601A(QR)	ZQ, ZR	DAP202K	P
DTC124EK	25	2SD1328ST	1DS, 1DT	DAN202K	N
DTC144EK	26	2SD621	30		
2SA1022C	EC	FMW3	W3		
2SA1037K	FQ, FR, FS	FMS3	S3		
2SB709	AO – AT				
2SB709A(QR)	BQ, BR				
2SC2405	SR, SS, ST				
2SC2405(ST)	SS, ST				
2SC2411K(QR)	CR, CQ				
2SC2412K	BQ, BR, BS				
2SC2412K(S)	BS				
2SC2412K(RS)	BR, BS				
2SC2778C	KC				
2SD601	YO – YT				
2SD601A	ZQ, ZR, ZS				
Imprinting (C) 3 Ranking AQ (B)2 1(E)		Imprinting Ranking AQ B C E		Imprinting N	

Note ; ( ) refers to Transistor rank.

3. Required tools:
   1) Fine tipped, well insulated soldering "pencil" (with absorbent) (Temp : 130°C ~ 260°C).
   2) Tweezers
   3) Blower type hair dryer.
4. Soldering cautions:
   1) Do not apply heat for more than 3 seconds.
   2) Avoid using a rubbing stroke when soldering.
   3) Discard removed chips; do not reuse them.
   4) Supplementary cementing is not required.
   5) Use care not to scratch or otherwise damage the chips.
5. Soldering conditions:
   1) Resistors, capacitors, etc.

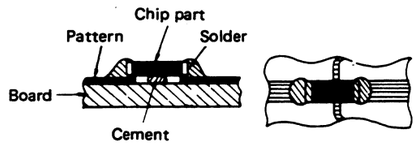


Fig. 4-1

   2) Transistors, diodes, etc.

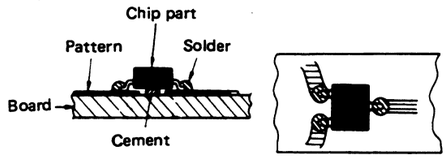


Fig. 4-2

6. Removal (resistors, capacitors, etc.):
   1) Grasp the part with repair jig and melt the solder at one side.

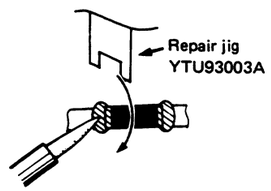


Fig. 4-3

   2) Melt the solder at the other side and remove the part with a twisting motion.

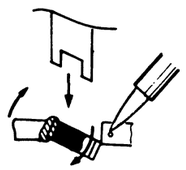


Fig. 4-4

7. Removal (transistors, diodes, etc.):
   1) Melt the solder of one lead.

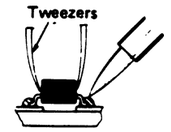


Fig. 4-5

   2) Lift the side of that lead upward.

Fig. 4-6

   3) Simultaneously heat solder of the two remaining leads and lift part to remove.

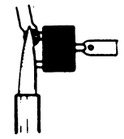


Fig. 4-7

8. Preheating (except for semiconductors):
   Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.
9. Replacement:
   1) Presolder the contact points of the circuit pattern.

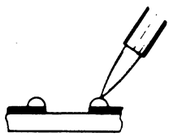


Fig. 4-8

   2) Press the part downward with repair jig and apply the soldering pencil as indicated in the figure.

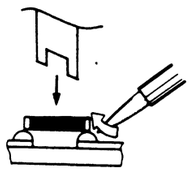


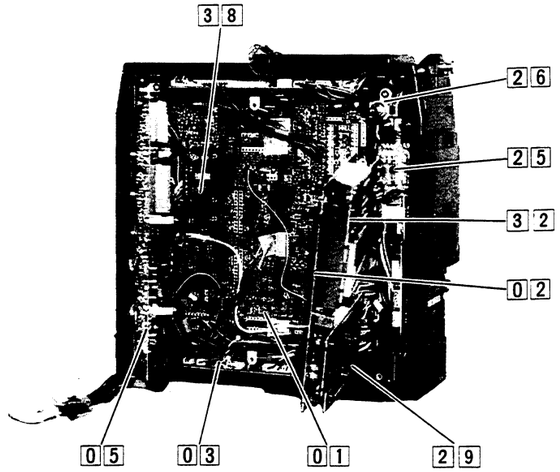
Fig. 4-9

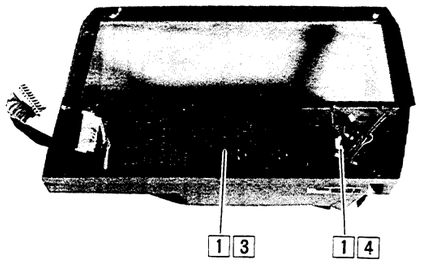
4-2

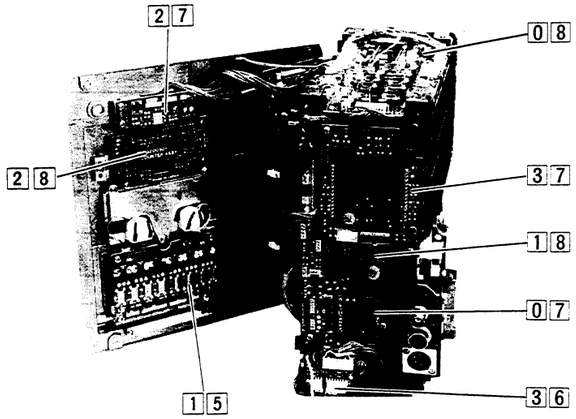
4.3 CIRCUIT BOARD LOCATIONS

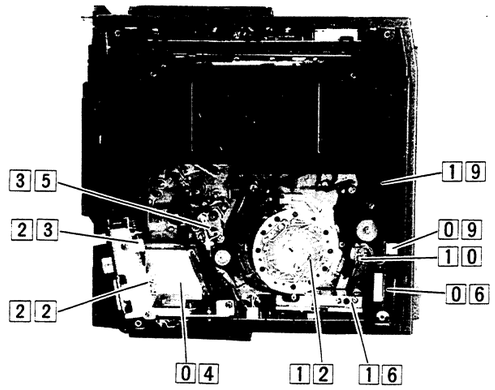
· Index to board by kind of diagram

Board No.	Board Name	Page of Diagram			
		Block Diagram	Schematic Diagram	Circuit Board	Parts List
01	VIDEO	4-5	4-10, 11	4-12, 13	6-6
02	COLOR	4-6	4-14	4-15	6-13
03	SERVO	4-7	4-30, 31	4-32	6-15
04	MDA	–	4-33	4-33	6-18
05	AUDIO	4-8	4-24	4-26, 27	6-18
05	FM AUDIO SUB	4-8	4-25	4-26, 27	6-23
06	FMA PRE AMP	–	4-23	4-23	6-24
07	REGULATOR	–	4-34	4-34	6-25
08	SYSCON	4-9	4-36	4-37	6-25
09	ERASE	–	4-34	4-34	6-27
10	FULL ERASE	–	–	–	6-28
13	XLR	–	4-28	4-29	6-28
14	AUDIO CONNECTOR	–	4-28	4-29	6-29
15	SWITCH	–	4-35	4-35	6-29
16	VIDEO PRE AMP	–	4-22	4-22	6-30
18	START SENSOR	–	–	4-40	6-30
19	END SENSOR	–	–	4-40	6-30
20	TAKE-UP SENSOR	–	–	4-40	–
21	SUPPLY SENSOR	–	–	4-40	–
22	DC IN	–	–	4-40	6-30
23	VIDEO OUTPUT	–	–	4-40	6-30
25	FUSE	–	–	4-40	6-31
26	MAIN SWITCH	–	–	4-40	6-31
27	OPERATION BUTTON	–	4-35	4-35	6-31
28	COUNTER	–	4-42	–	–
29	PB COMB	4-5	4-16	4-17	–
32	COLOR SUB	4-6	4-18	4-18	–
35	A/C HEAD	–	–	4-42	6-35
36	VITC JUNC	–	4-21	4-21	6-35
37	ADVANCE REC	–	4-20	4-20	6-35
38	VIDEO (2)	4-5	4-19	4-19	
39	EARPHONE	–	4-28	4-29	6-36



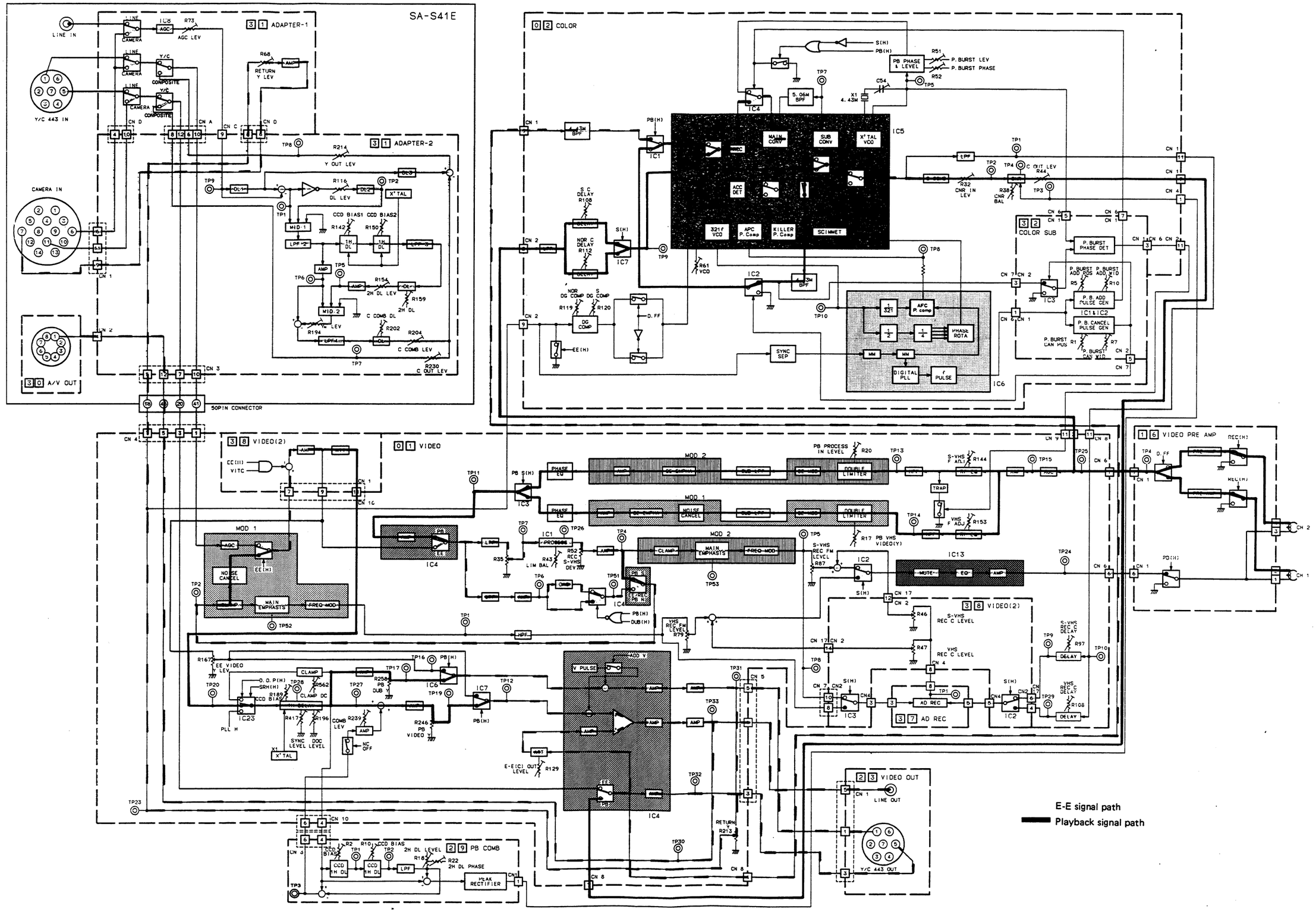




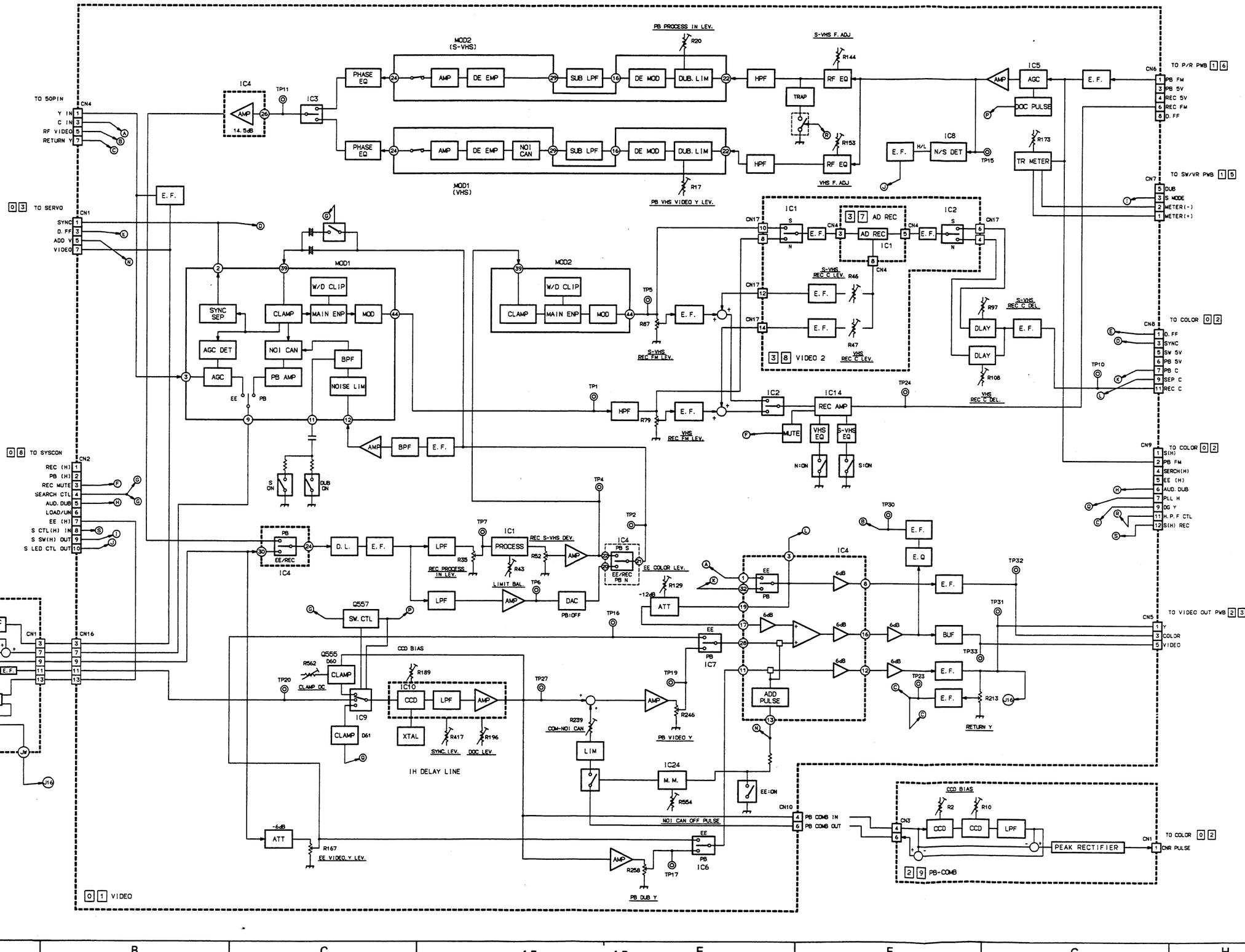


4-3

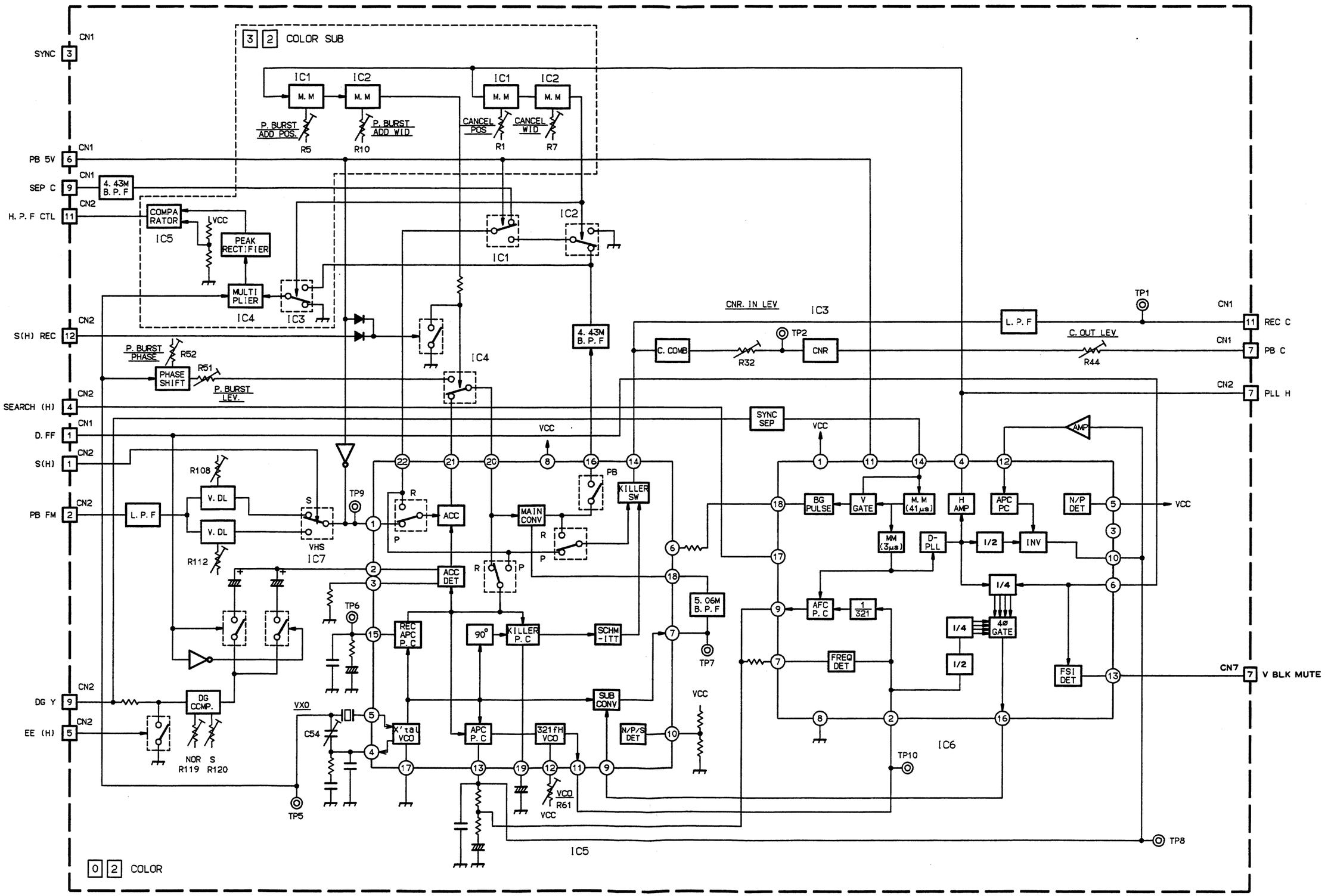
4.4 VIDEO SYSTEM BLOCK DIAGRAM



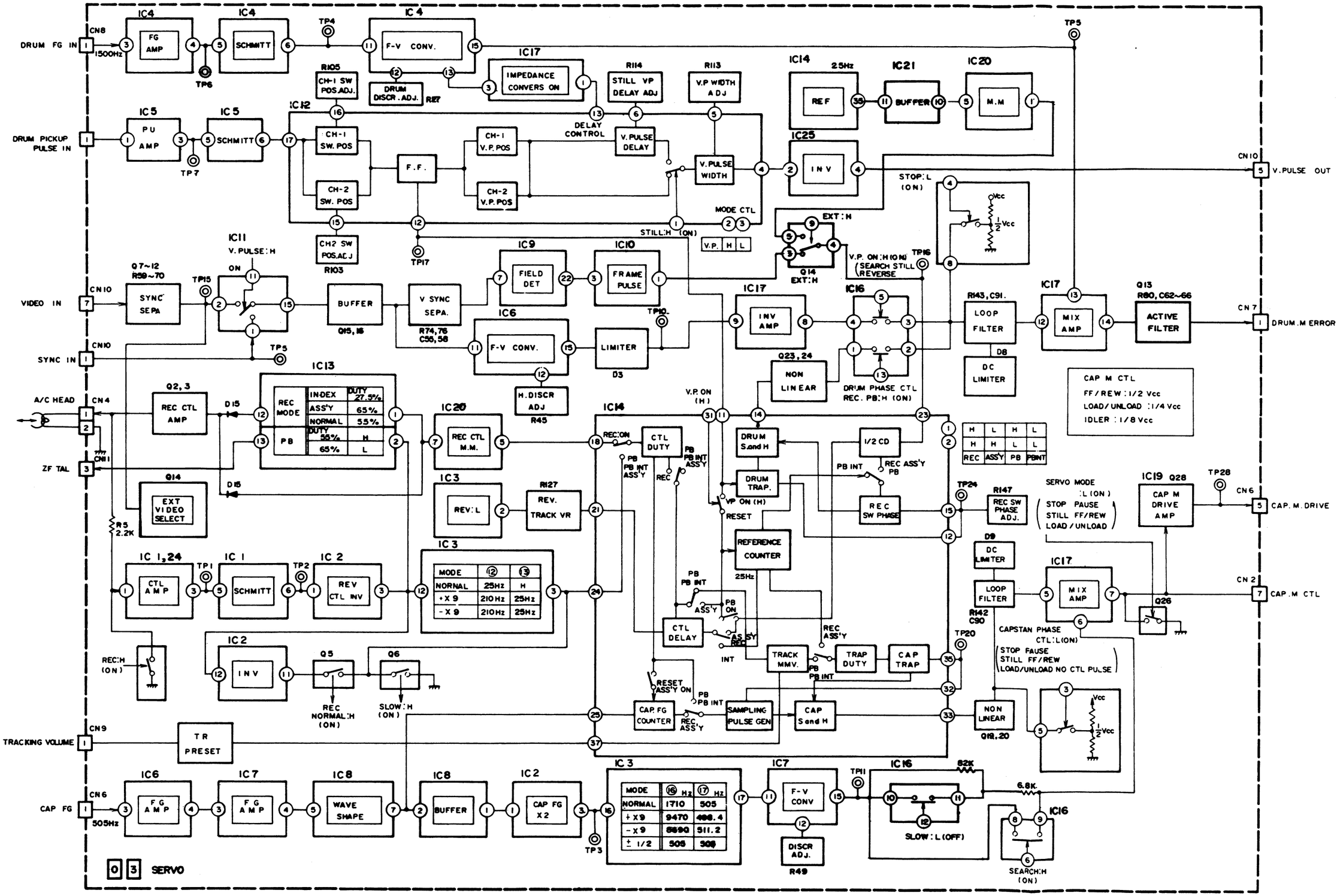
4.5 VIDEO BLOCK DIAGRAM



4.6 COLOR BLOCK DIAGRAM



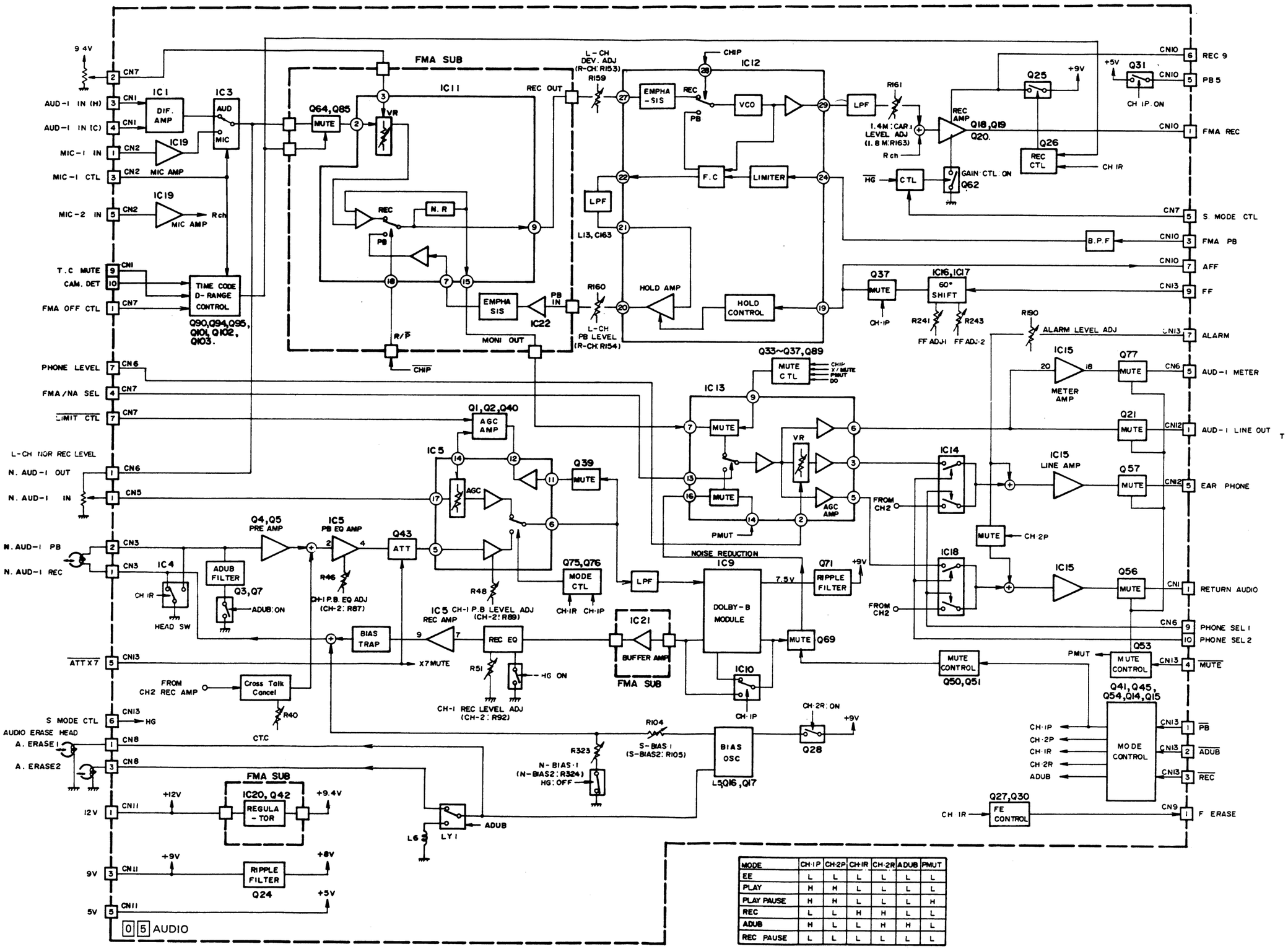
4.7 SERVO BLOCK DIAGRAM



A B C 4-7 4-7 E F G H

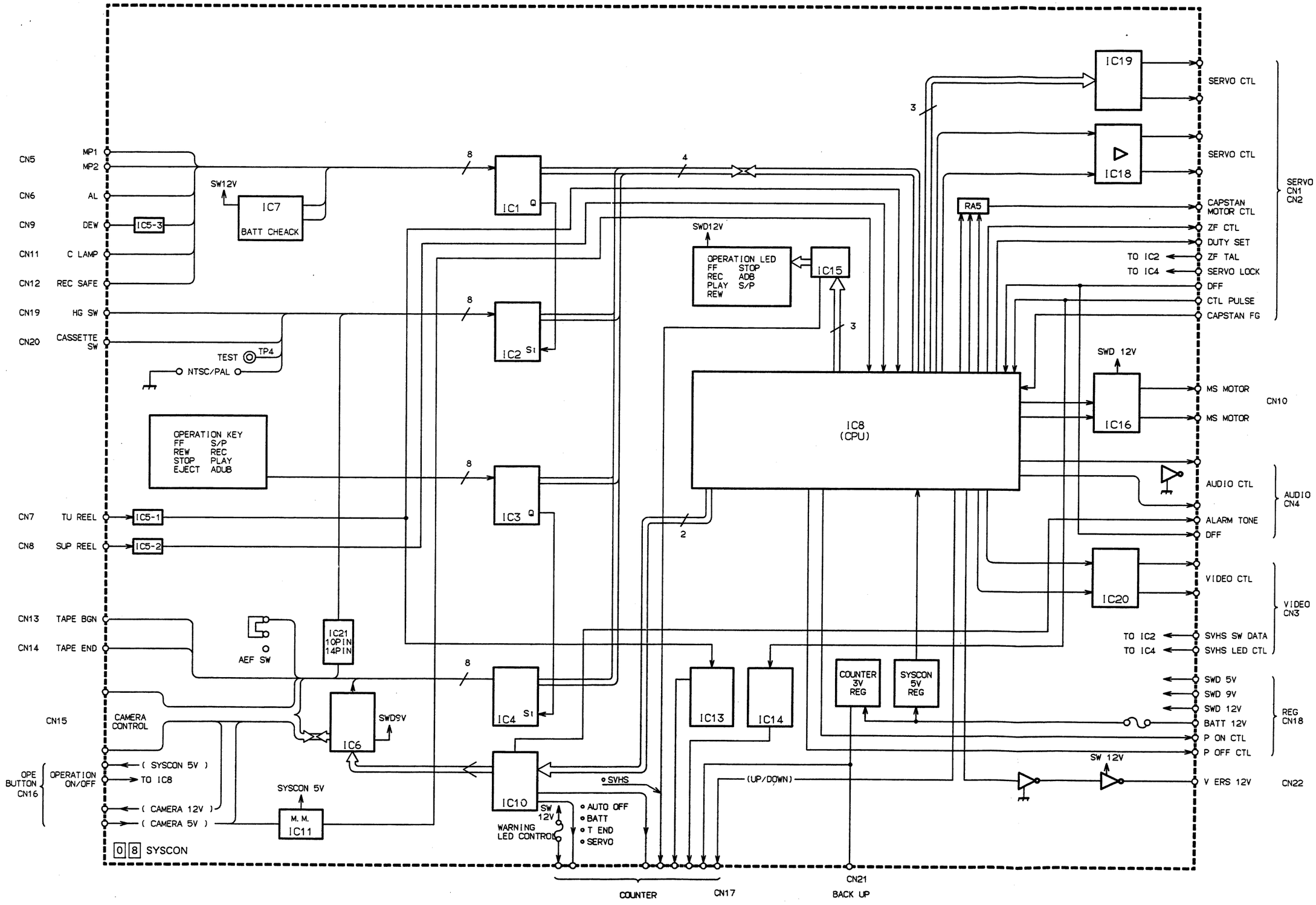
1 2 3 4 5 6 7

4.8 AUDIO BLOCK DIAGRAM

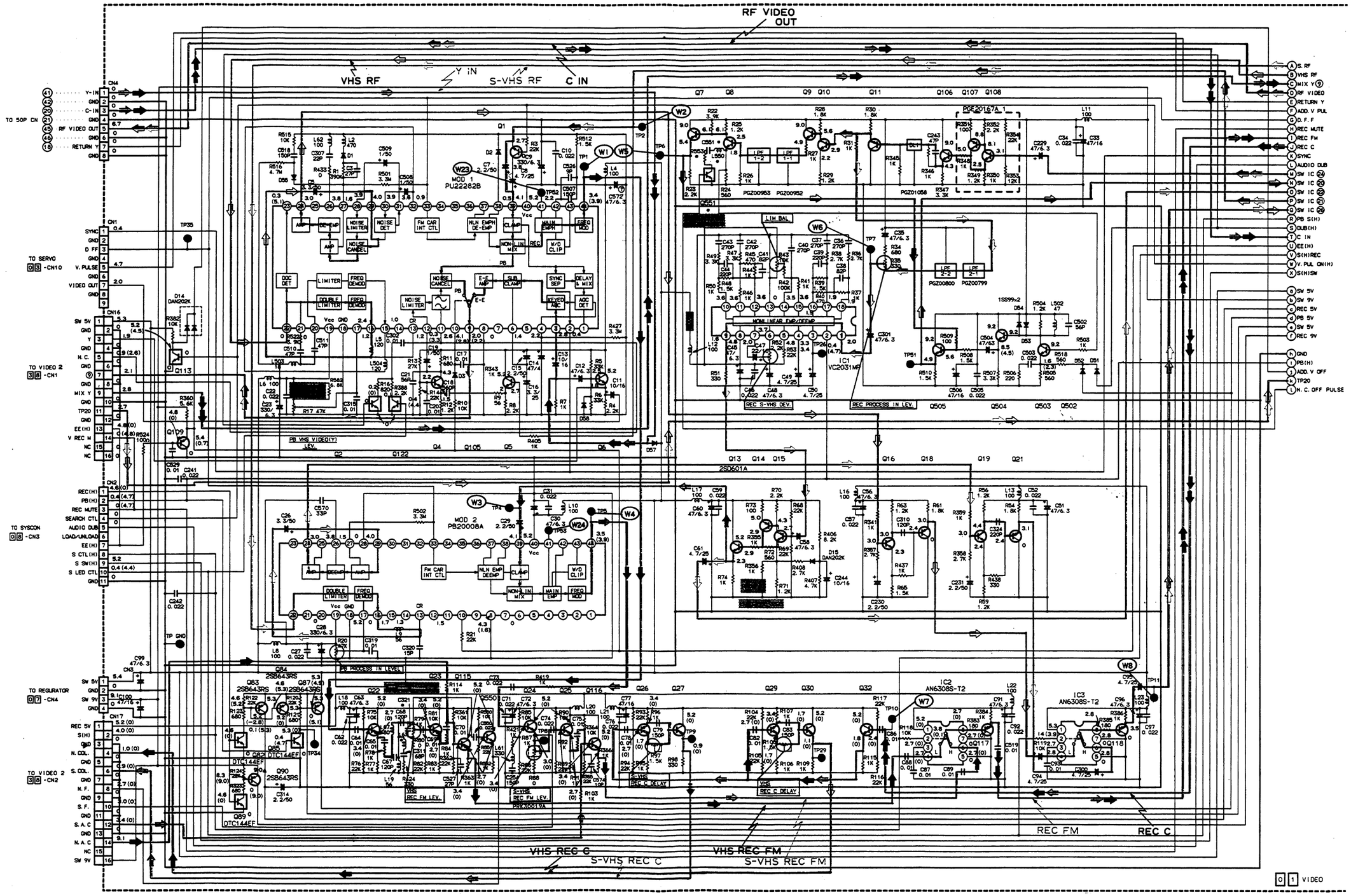


MODE	CH-IP	CH-2P	CH-IR	CH-2R	ADUB	PMUT
EE	L	L	L	L	L	L
PLAY	H	H	L	L	L	L
PLAY PAUSE	H	H	L	L	L	H
REC	L	L	H	H	L	L
ADUB	H	L	L	H	H	L
REC PAUSE	L	L	L	L	L	L

4.9 SYSCON BLOCK DIAGRAM



4.10 VIDEO SCHEMATIC DIAGRAM



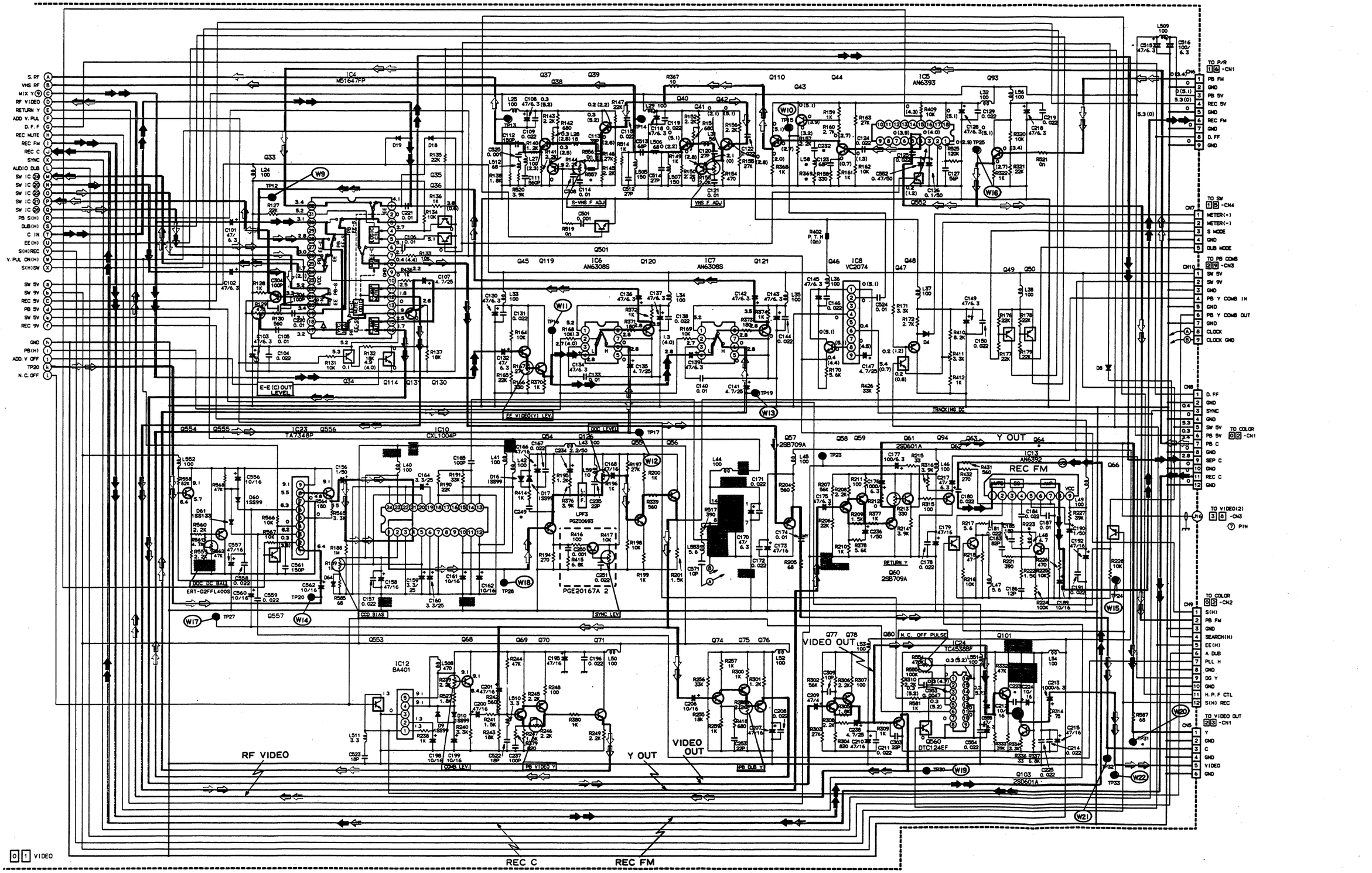
Following symbols in schematic indicate circuit part accrding to mode.

S-VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

Note: Unless otherwise specified;
- All NPN transistors are 2SC2778C.
- All PNP transistors are 2SA1022C.
- All NPN DEG1. transistors are DTC144EKT.
- All PNP DEG1. transistors are DTA144EKT.
- All diodes are 1SS133.
- All resistance values are in ohms. 1/10W.
- All inductance values are in μH.
- All capasitance values are in μF.

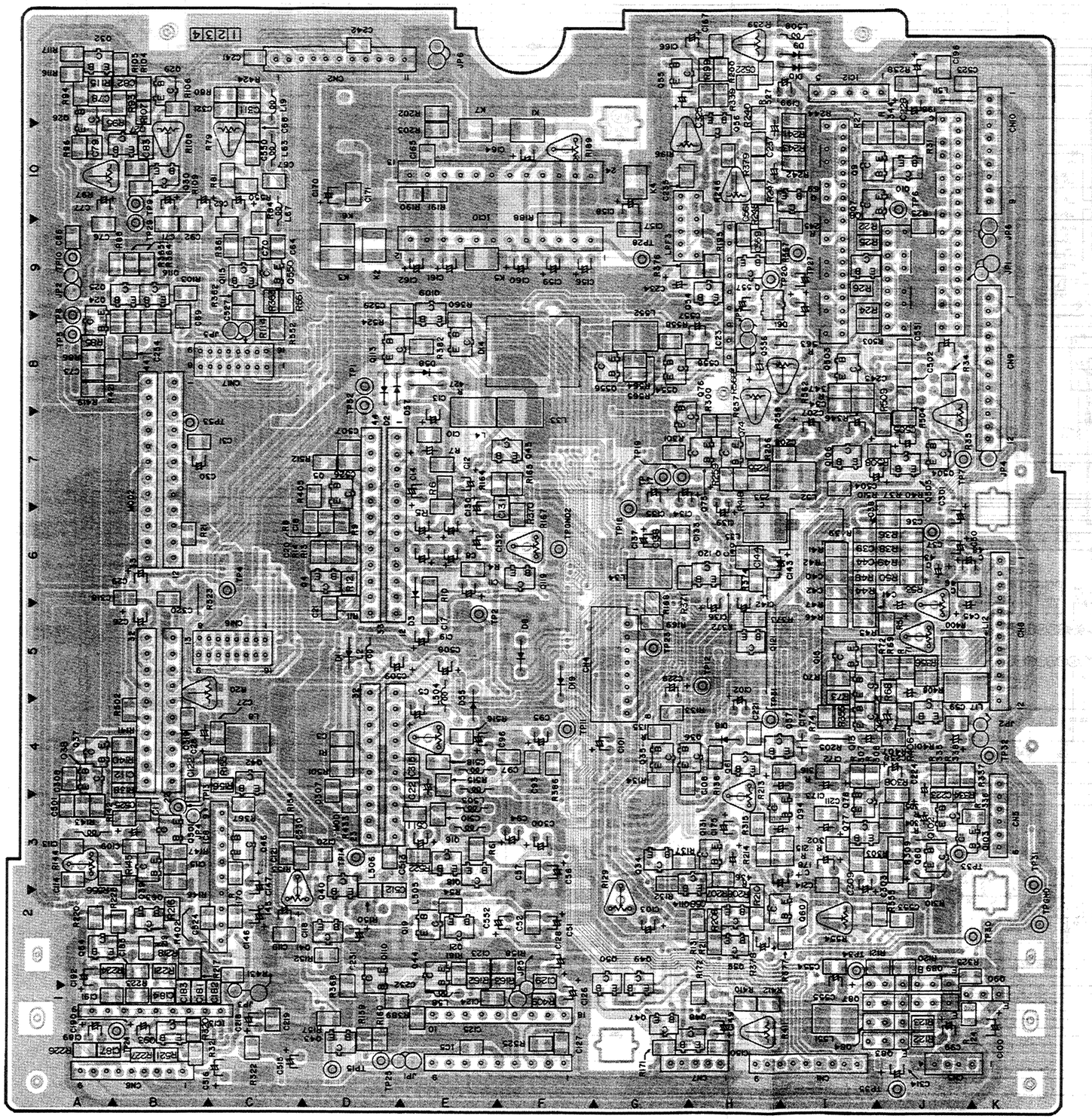
- Electrolytic
- Tantalum
- Ceramic
- is no part



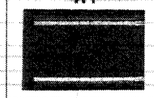
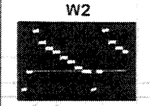
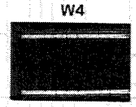
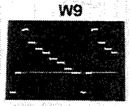
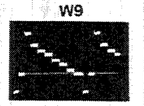
I | J | K | L | 4-11 | 4-11 | N | O | P

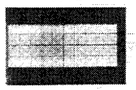
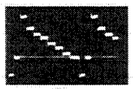
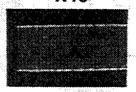
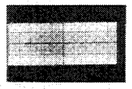
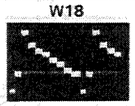
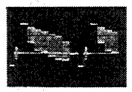
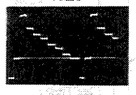
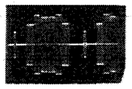
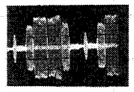
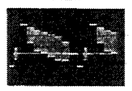
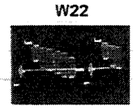
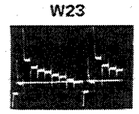
4.11 VIDEO CIRCUIT BOARD

— Rear —

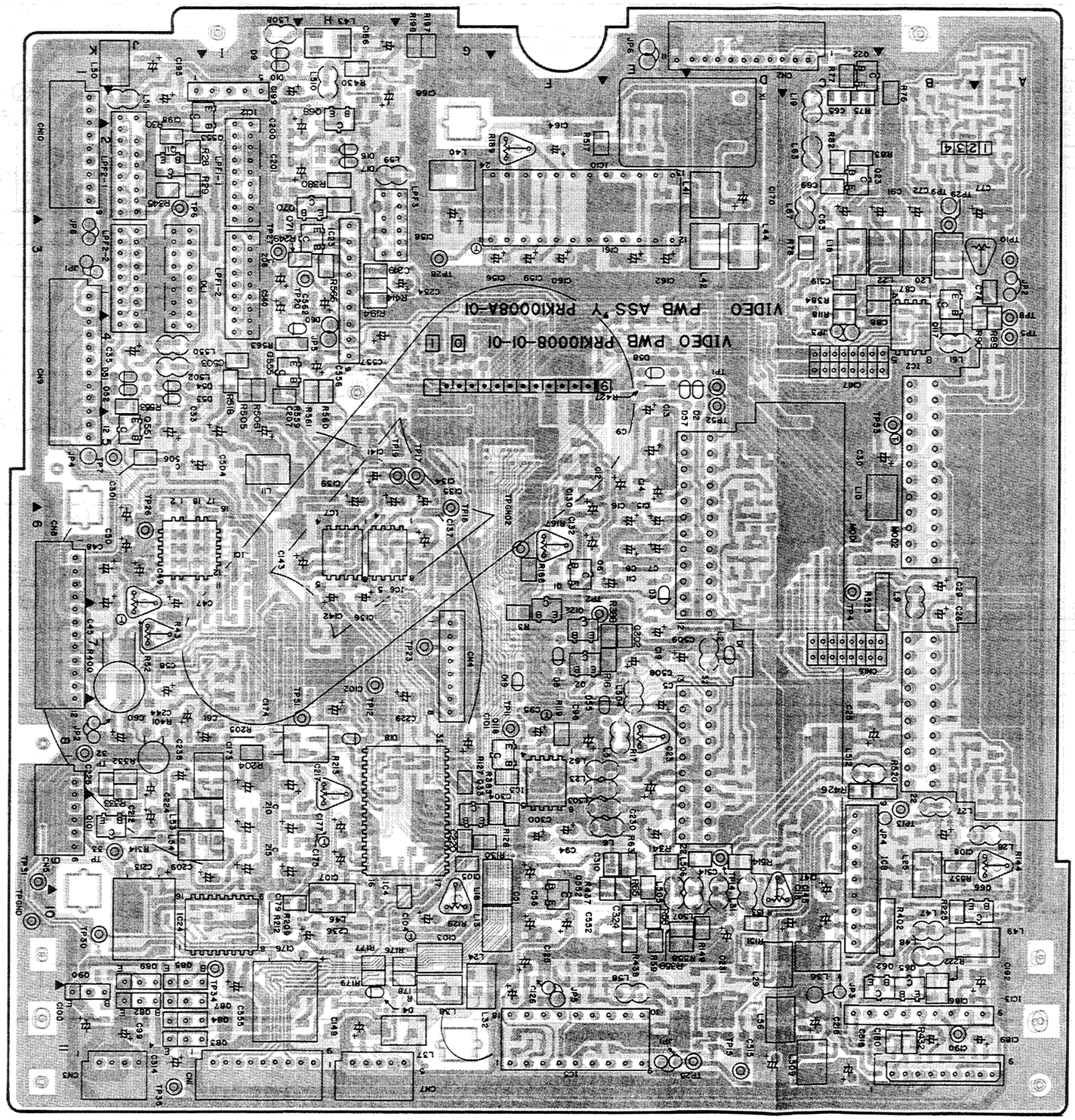


— MAIN WAVEFORMS OF VIDEO CIRCUIT —

W1  TP1 1.2 Vp-p [VHS REC]	W2  TP2 1.2 Vp-p [EE]	W2  TP2 1.1 Vp-p [PB]
W3  TP4 1.1 Vp-p [EE]	W4  TP5 1.2 Vp-p [S-VHS EE]	W5  TP6 1.2 Vp-p [EE]
W5  TP6 1.1 Vp-p [VHS PB]	W6  TP7 0.4 Vp-p [EE]	W6  TP7 0.4 Vp-p [S-VHS PB]
W7  TP10 0.3 Vp-p [S-VHS EE]	W7  TP10 0.3 Vp-p [VHS EE]	W8  TP11 0.2 Vp-p [S-VHS PB]
W8  TP11 0.2 Vp-p [VHS PB]	W9  TP12 0.5 Vp-p [EE]	W9  TP12 0.5 Vp-p [PB]

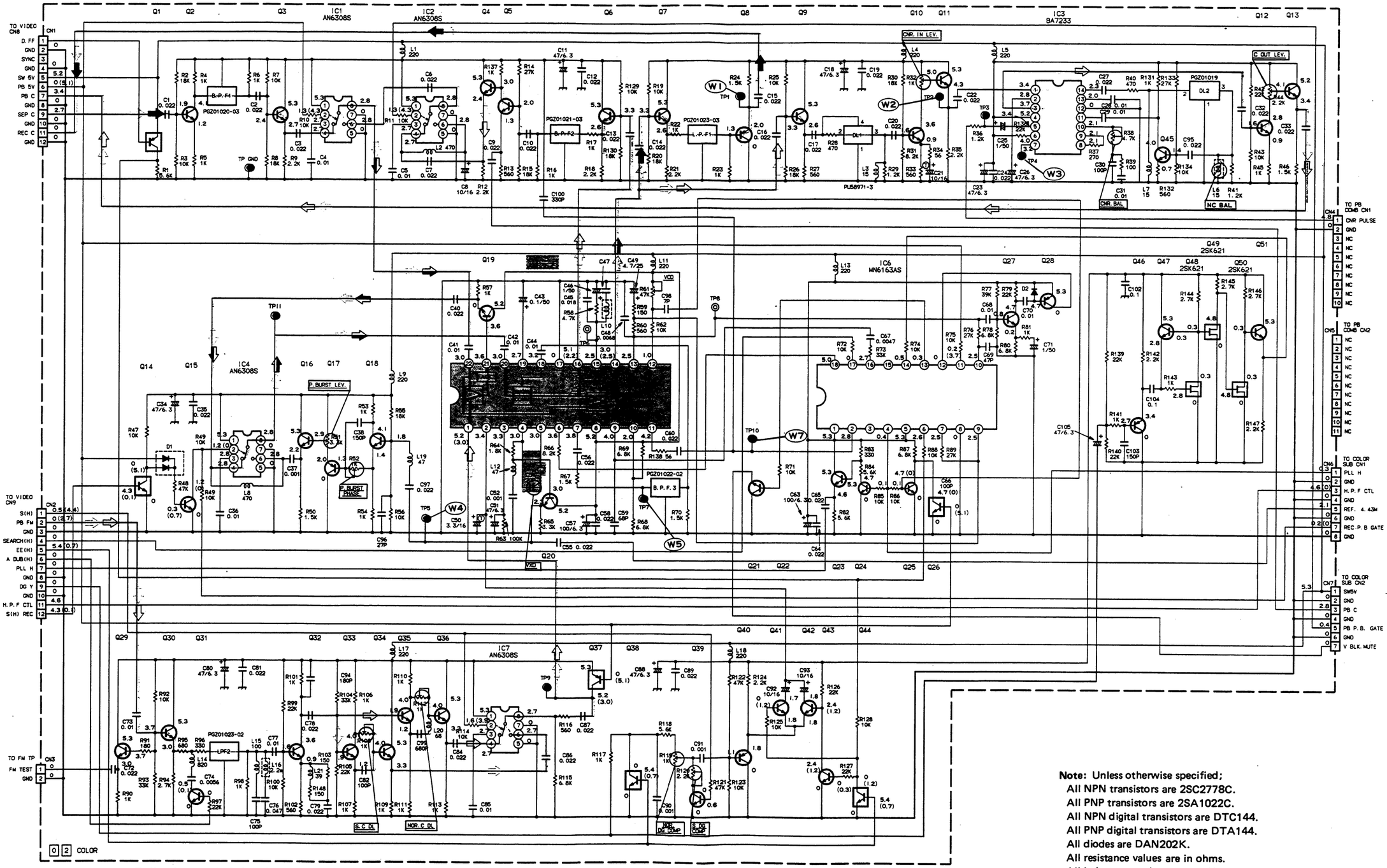
W10	W11	W12
		
TP15 0.4 Vp-p [S-VHS PB] 0.3 Vp-p [VHS PB]	TP16 0.5 Vp-p [EE]	TP17 0.5 Vp-p [PB]
W13	**W14**	**W15**
		
TP19 0.5 Vp-p [PB]	TP20 0.6 Vp-p [PB]	TP24 4.0 Vp-p [S-VHS EE] 3.2 Vp-p [VHS EE]
W16	**W17**	**W18**
		
TP25 0.5 Vp-p [PB]	TP27 0.6 Vp-p [PB]	TP28 0.5 Vp-p [PB]
W19	**W19**	**W20**
		
TP30 1.0 Vp-p (75-ohm termi- nation) [EE]	TP30 1.0 Vp-p (75-ohm termi- nation) [PB]	TP31 1.0 Vp-p (75-ohm termi- nation) [EE]
W20	**W21**	**W21**
		
TP31 1.0 Vp-p (75-ohm termi- nation) [PB]	TP32 BURST LEVEL: 0.3 Vp-p (75 -ohm termination) [EE]	TP32 BURST LEVEL: 0.3 Vp-p (75-ohm termi- nation) [PB]
W22	**W22**	**W23**
		
TP33 1.0 Vp-p (75-ohm termi- nation) [EE]	TP33 1.0 Vp-p (75-ohm termi- nation) [PB]	TP52 0.7 Vp-p [VHS EE]
W24		
		
TP53 0.8 Vp-p [S-VHS EE]		

— Front —



I J K L 4-13 4-13 N O P

4.12 COLOR SCHEMATIC DIAGRAM



Following symbols in schematic indicate circuit part accrding to mode.

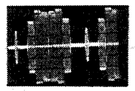
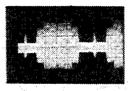
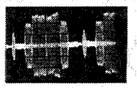
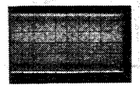
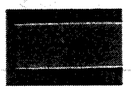
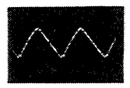
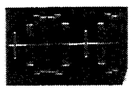
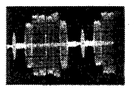
S-VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

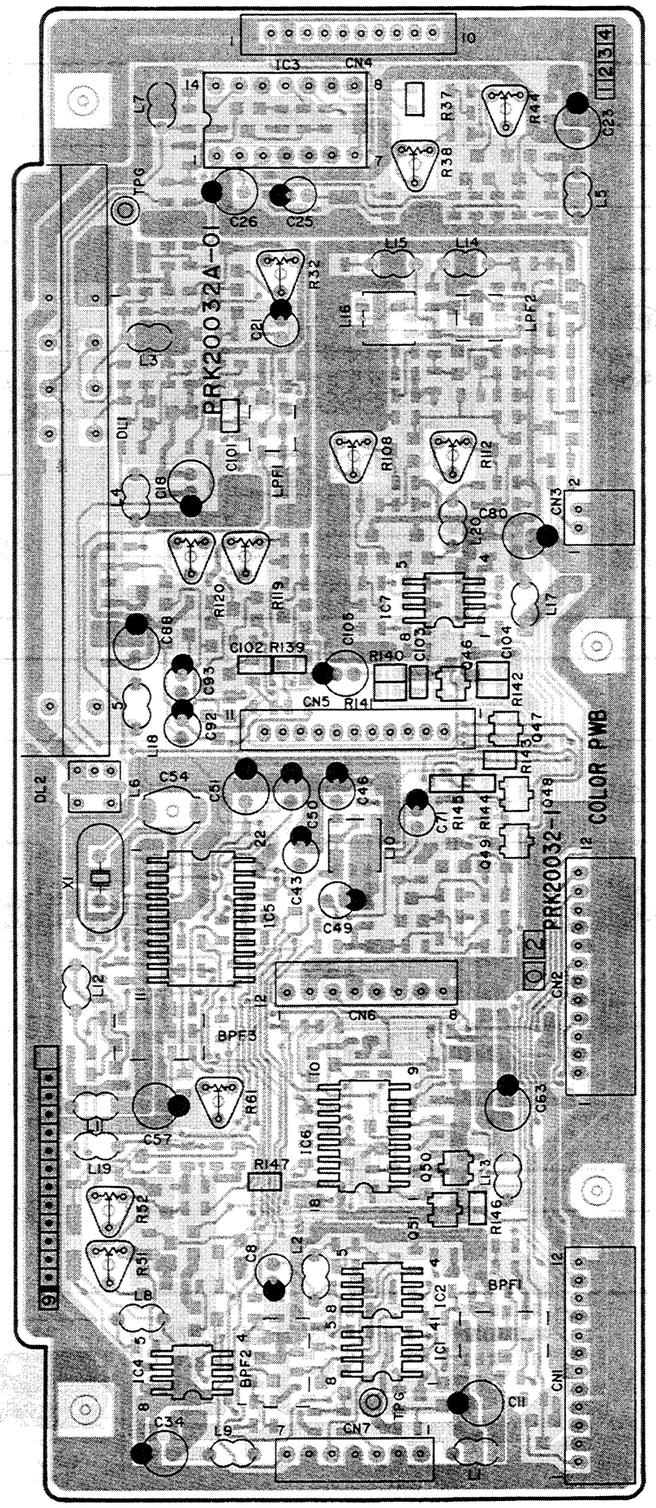
Note: Unless otherwise specified;
- All NPN transistors are 2SC2778C.
- All PNP transistors are 2SA1022C.
- All NPN digital transistors are DTC144.
- All PNP digital transistors are DTA144.
- All diodes are DAN202K.
- All resistance values are in ohms.
- All inductance values are in μH.
- All capasitance values are in μF.
- Electrolytic
- Ceramic

4.13 COLOR CIRCUIT BOARD

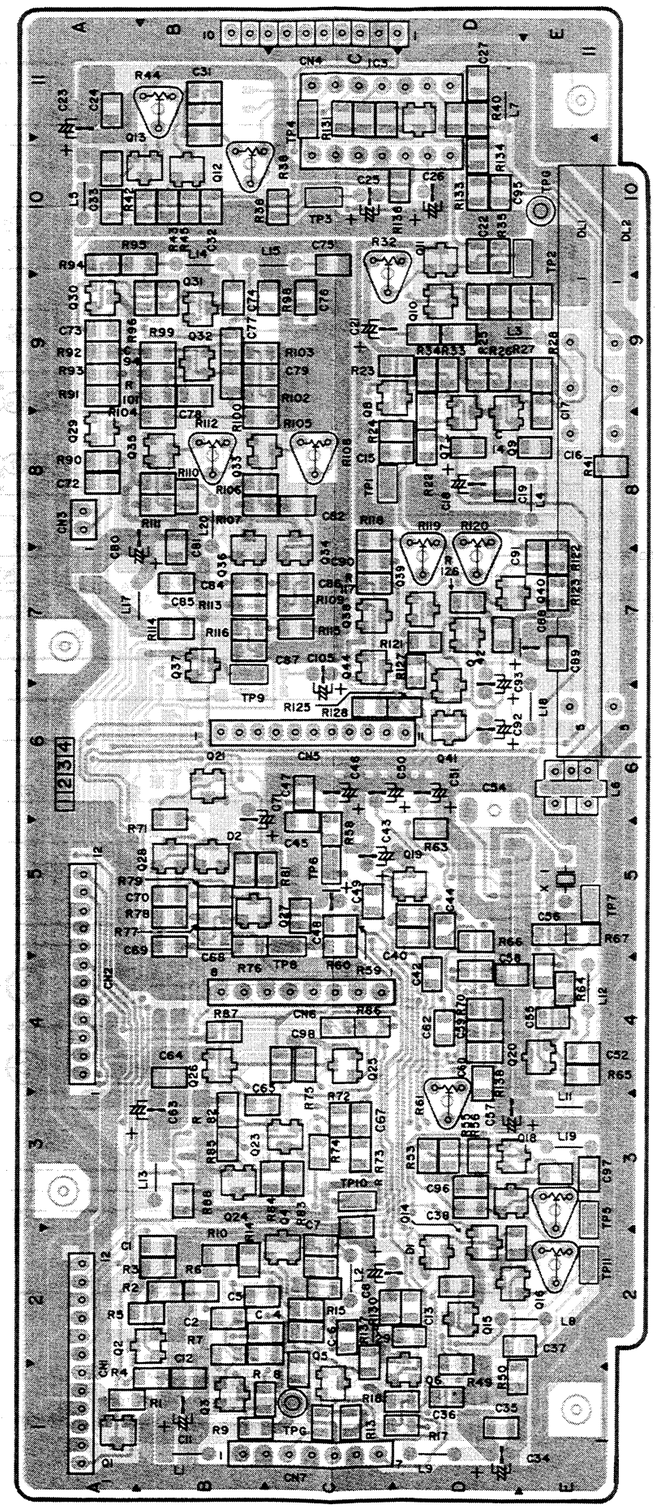
– MAIN WAVEFORMS OF COLOR CIRCUIT –

W1  TP1 0.3 Vp-p [EE]	**W2**  TP2 0.1 Vp-p [EE]
W2  TP2 0.3 Vp-p [PB]	**W3**  TP4 85 mV [REC]
W4  TP5 0.5 Vp-p [EE]	**W5**  TP7 0.3 Vp-p [EE]
W6  TP9 0.2 Vp-p [S-VHS PB]	**W7**  TP10 0.1 Vp-p/5.0 MHz
W8  TP11 0.5 Vp-p [VHS EE]	**W8**  TP11 0.7 Vp-p [VHS PB]
W8  TP11 0.7 Vp-p [S-VHS PB]	

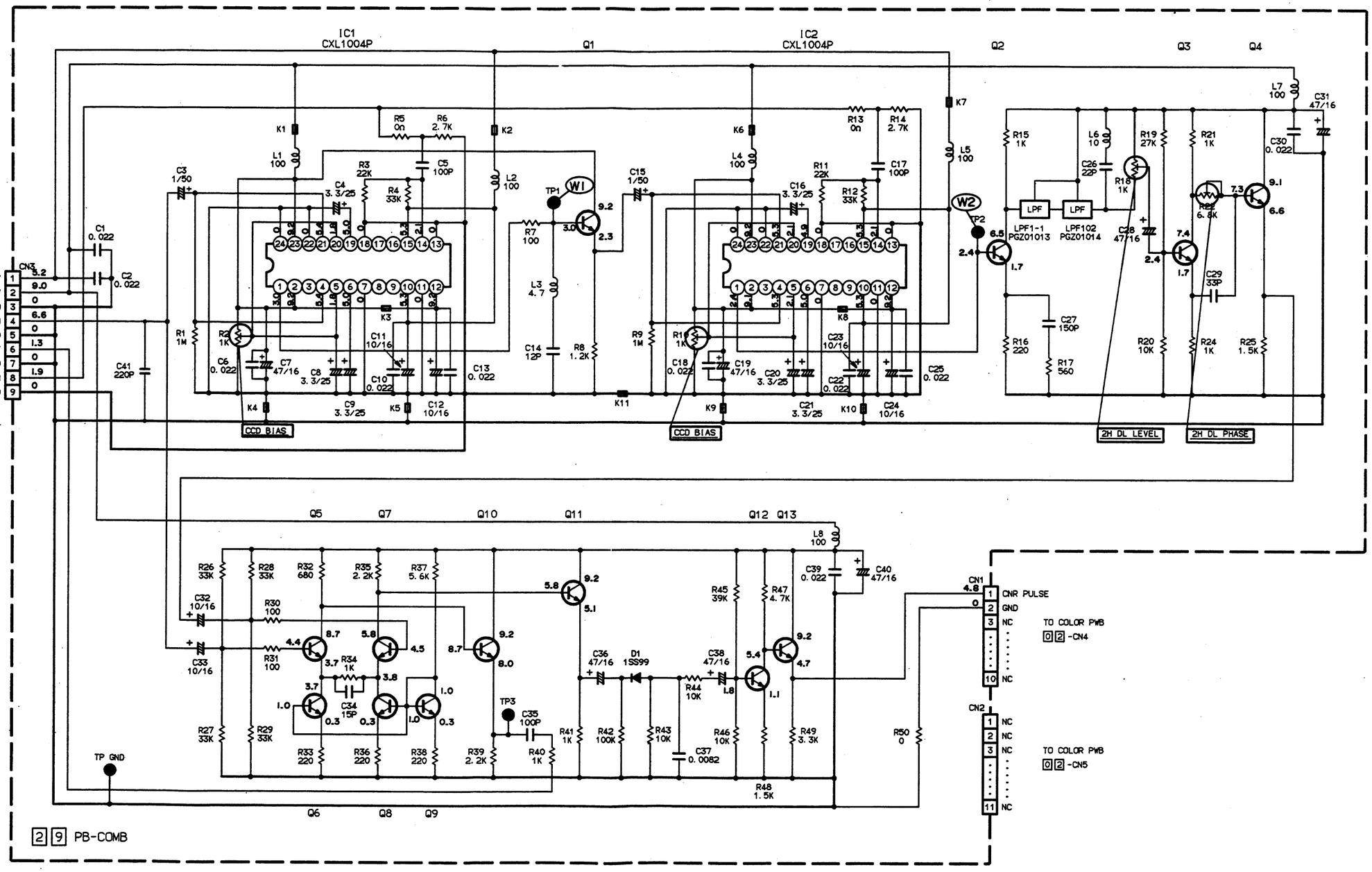
– Front –



– Rear –



4.14 PB COMB SCHEMATIC DIAGRAM



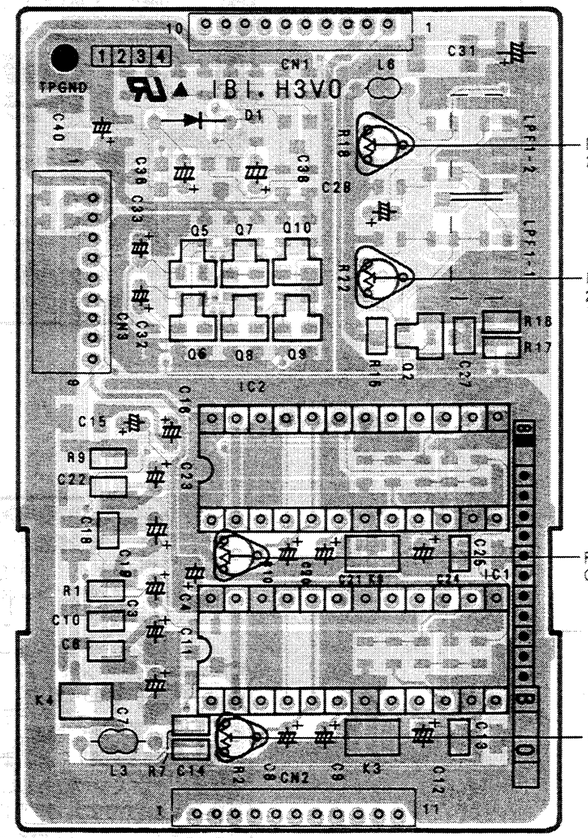
NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are 2SC2778C.
5. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.

– MAIN WAVEFORMS OF PB COMB CIRCUIT –

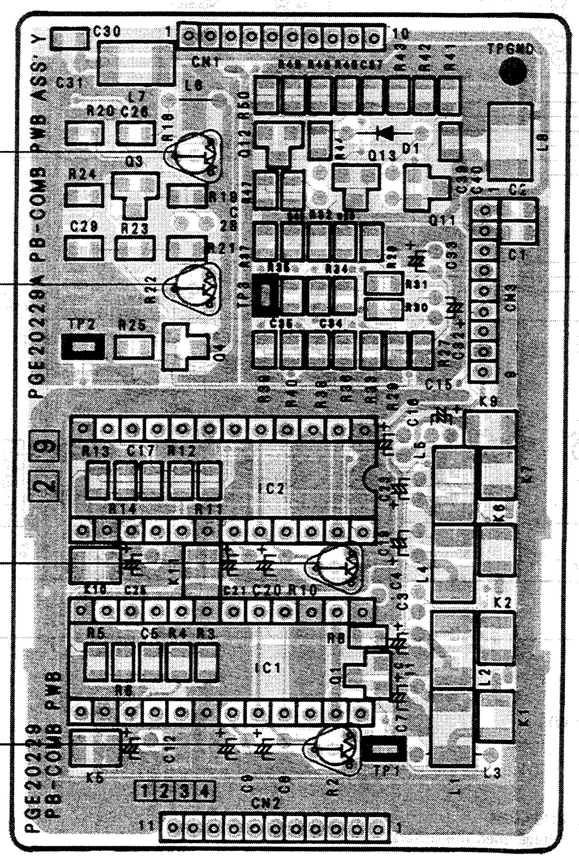
W1	W1	W2	W2
			
TP1 0.7 Vp-p [REC]	TP1 0.6 Vp-p [PB]	TP2 0.5 Vp-p [REC]	TP2 0.4 Vp-p [PB]

— PB COMB —

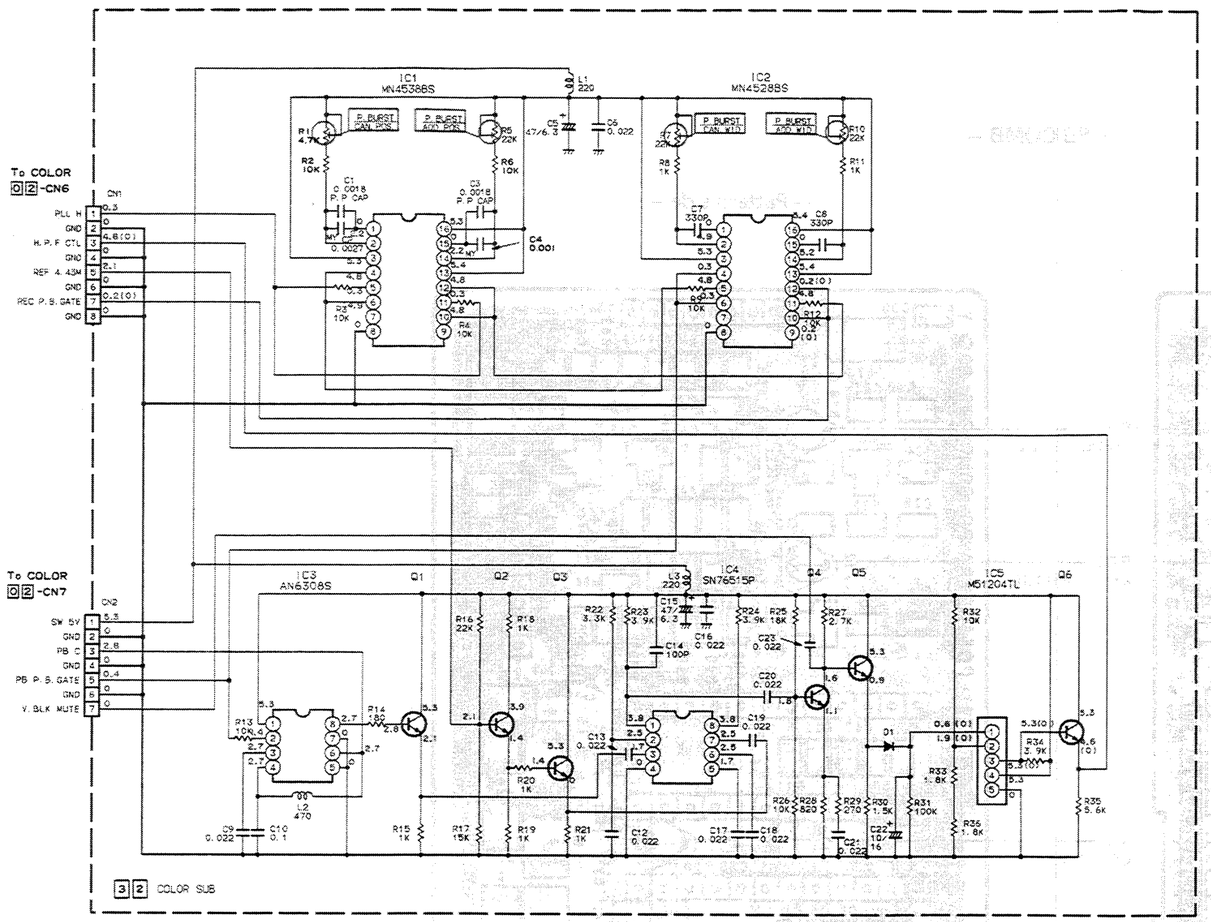
— Parts side —



— Pattern side —



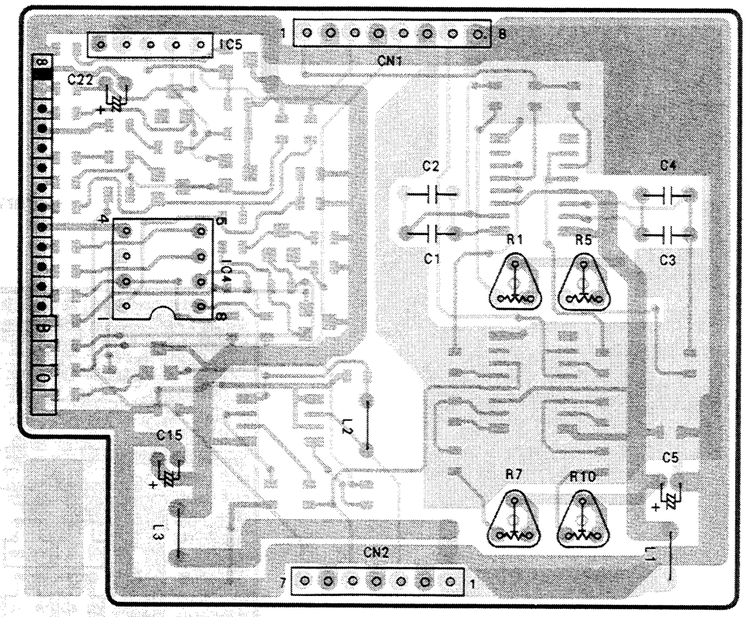
4.16 COLOR SUB SCHEMATIC DIAGRAM



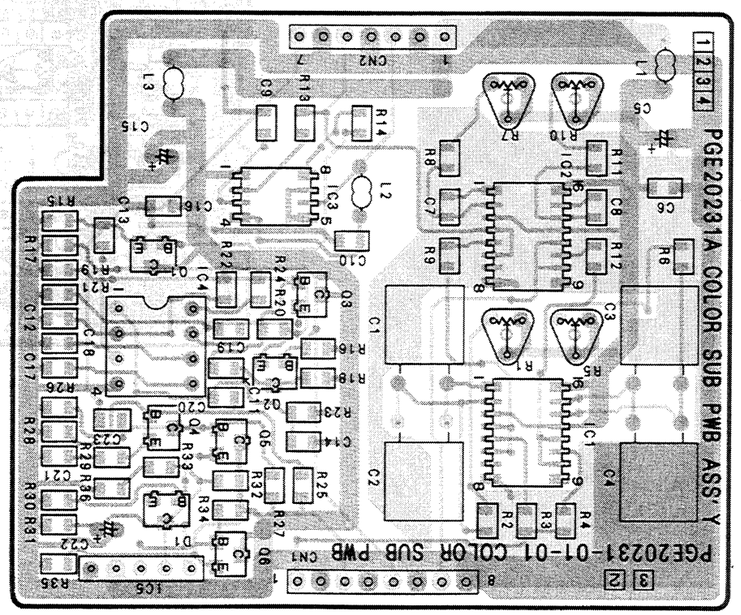
NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are 2SC2778C.
5. All diodes are DA204K.
6. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.

4.17 COLOR SUB CIRCUIT BOARD

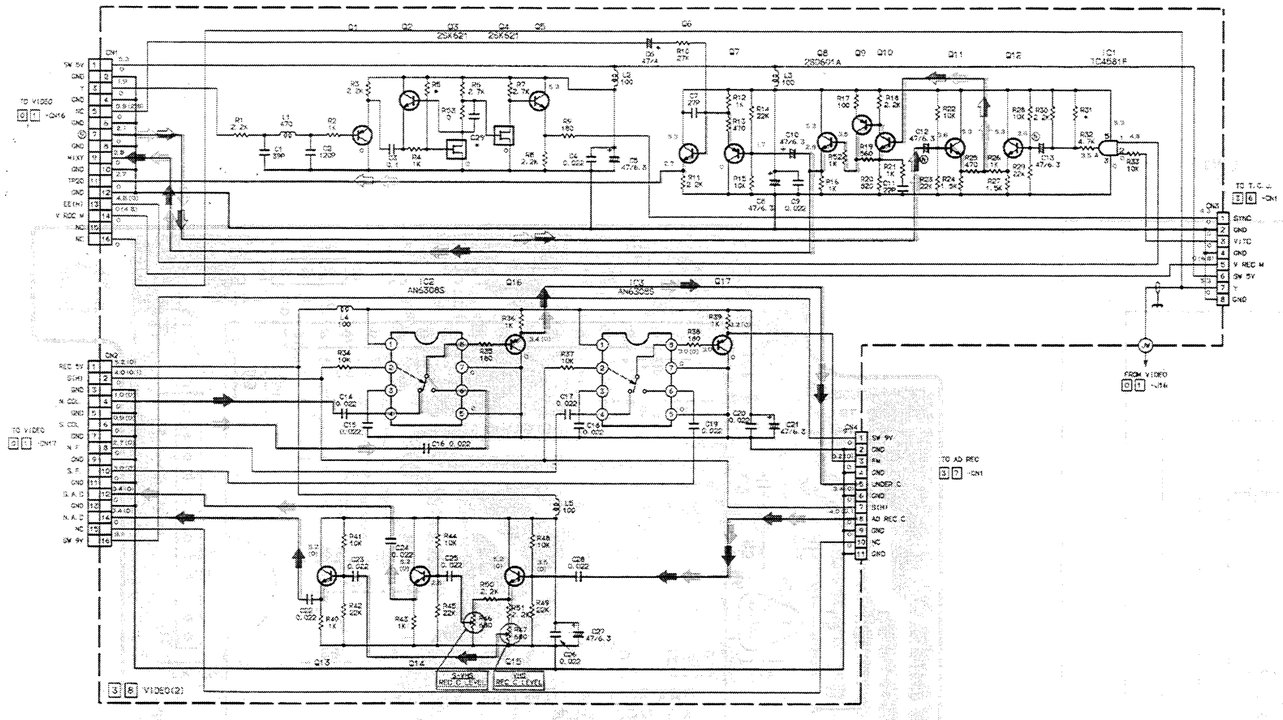
— Pattern side —



— Parts side —



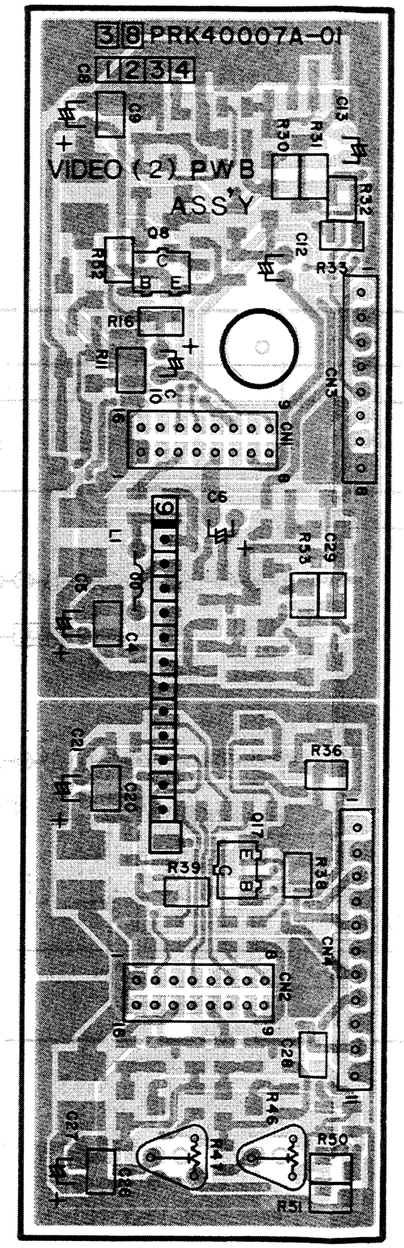
4.18 VIDEO (2) SCHEMATIC DIAGRAM



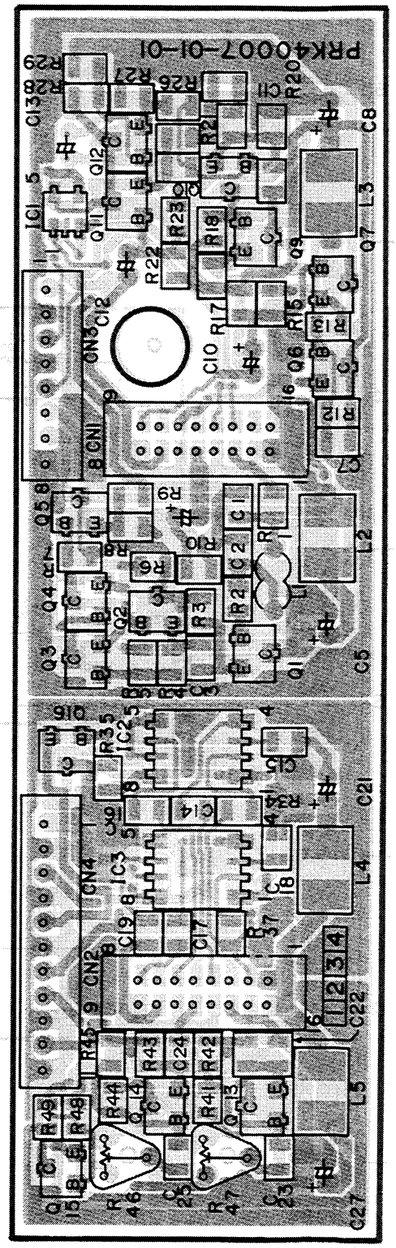
Note: Unless otherwise specified;
All NPN transistors are 2SC2778C.
All PNP transistors are 2SA1022C.
All resistance values are in ohms. 1/10W
All inductance values are in μH.
All capasitance values are in μF.
⊣⊢ Electorytic
⊣⊢ Ceramic
-·- is no part

4.19 VIDEO (2) CIRCUIT BOARD

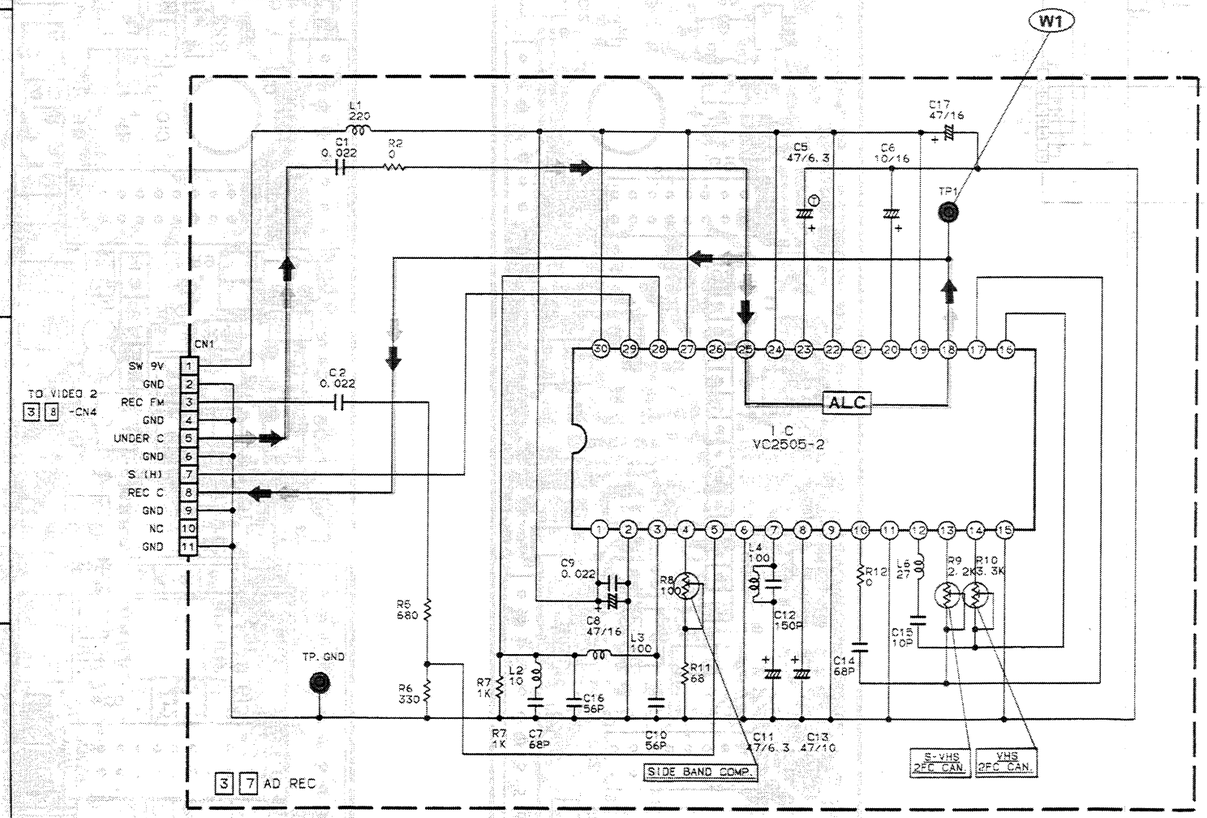
— Pattern side —



— Parts side —



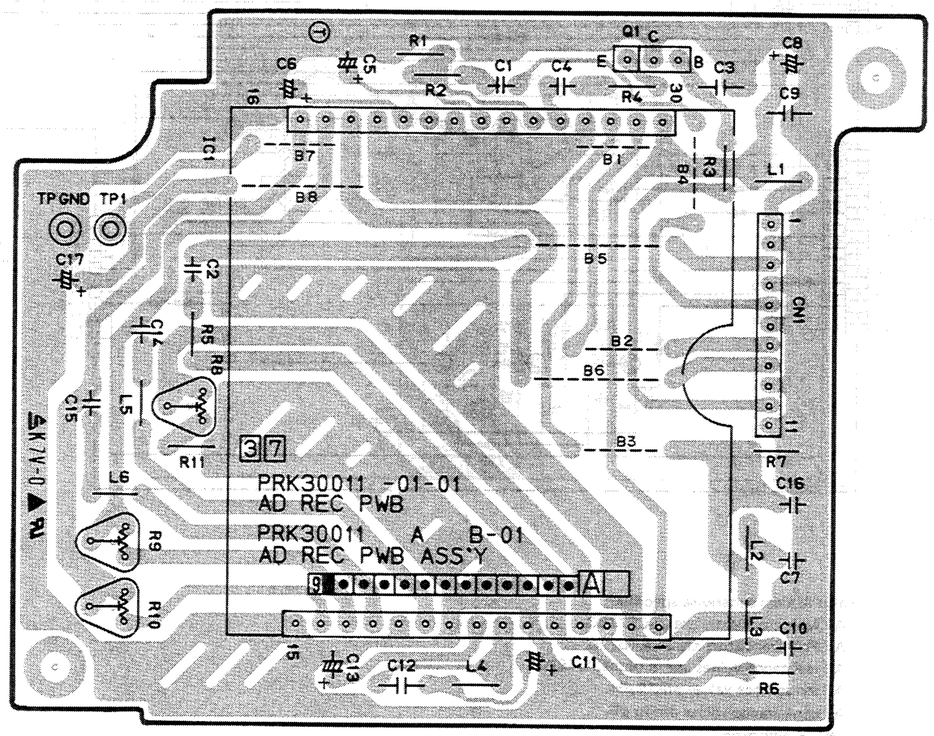
4.20 ADVANCE REC SCHEMATIC DIAGRAM



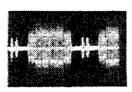
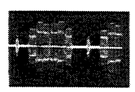
Note: Unless otherwise specified;
All resistance values are in ohms. 1/6 W
All inductance values are in μH.
All capasitance values are in μF.

+ Electrolytic
Ceramic
Tantalum

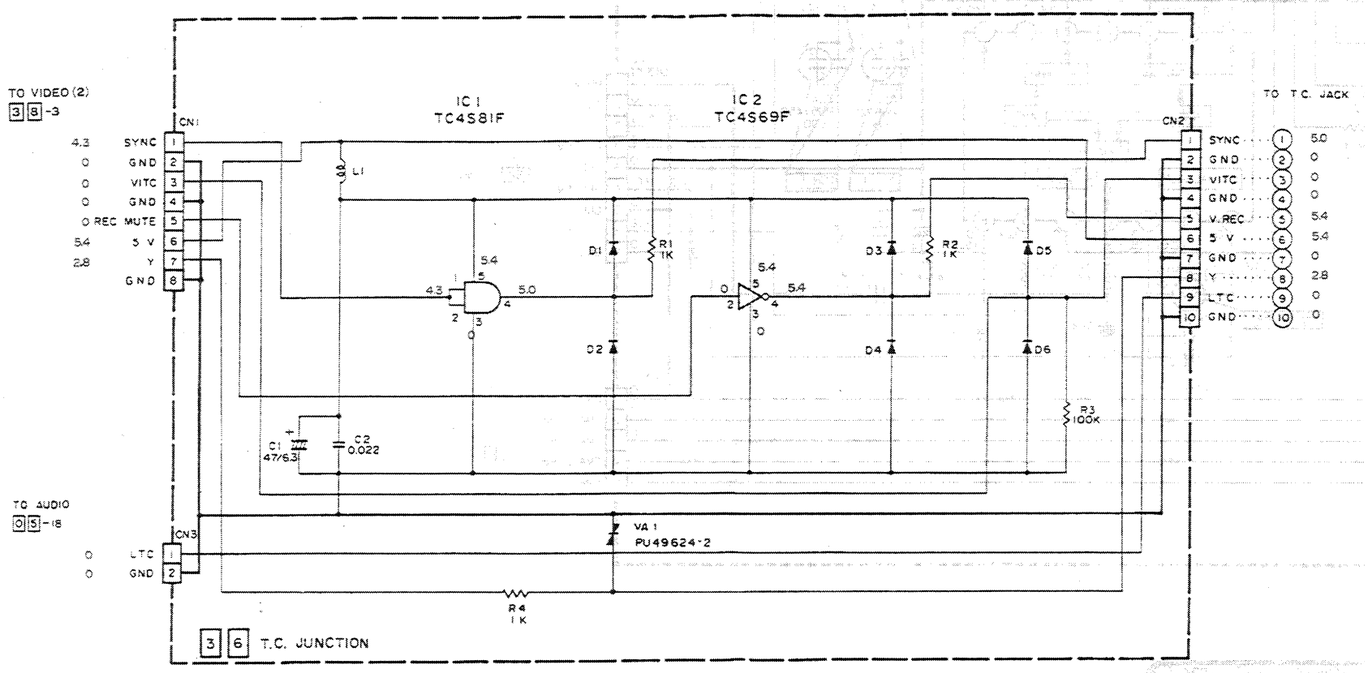
4.21 ADVANCE REC CIRCUIT BOARD



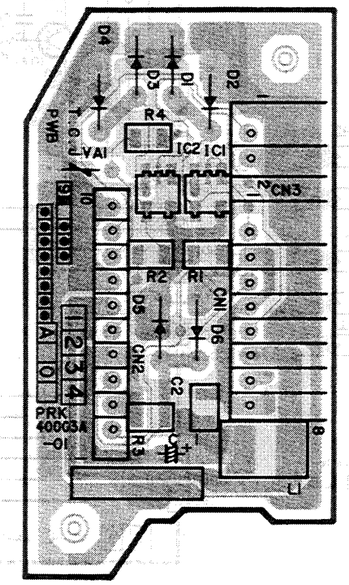
— MAIN WAVEFORMS OF AD REC CIRCUIT —

W1	W1
	
TP1 500 mVp-p [S-VHS REC]	TP1 470 mVp-p [VHS REC]

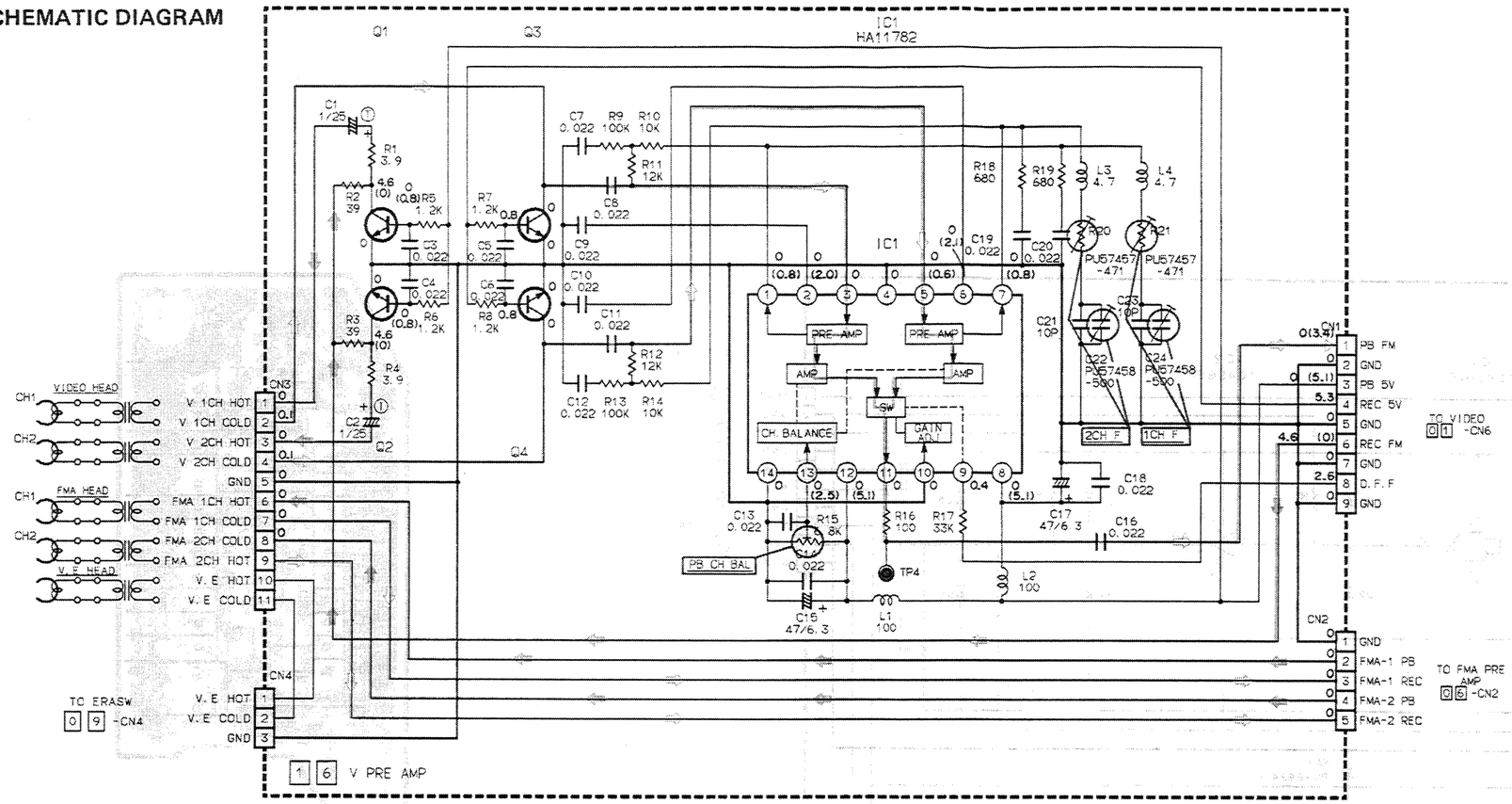
4.22 VITC JUNC SCHEMATIC DIAGRAM



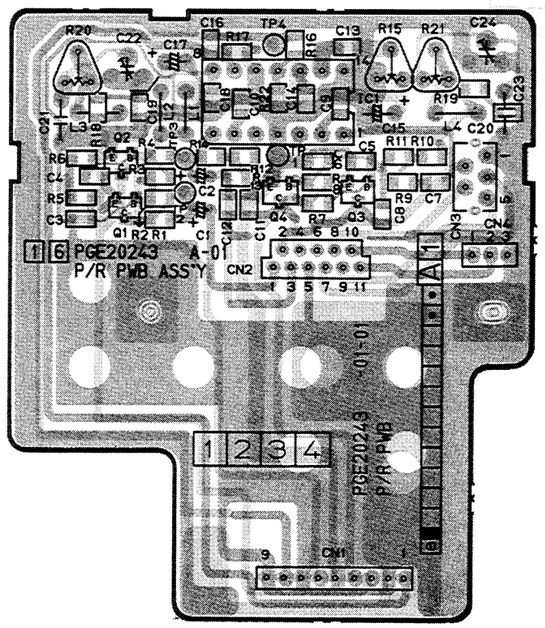
4.23 VITC JUNC CIRCUIT BOARD



4.24 VIDEO PREAMP SCHEMATIC DIAGRAM



4.25 VIDEO PREAMP CIRCUIT BOARD



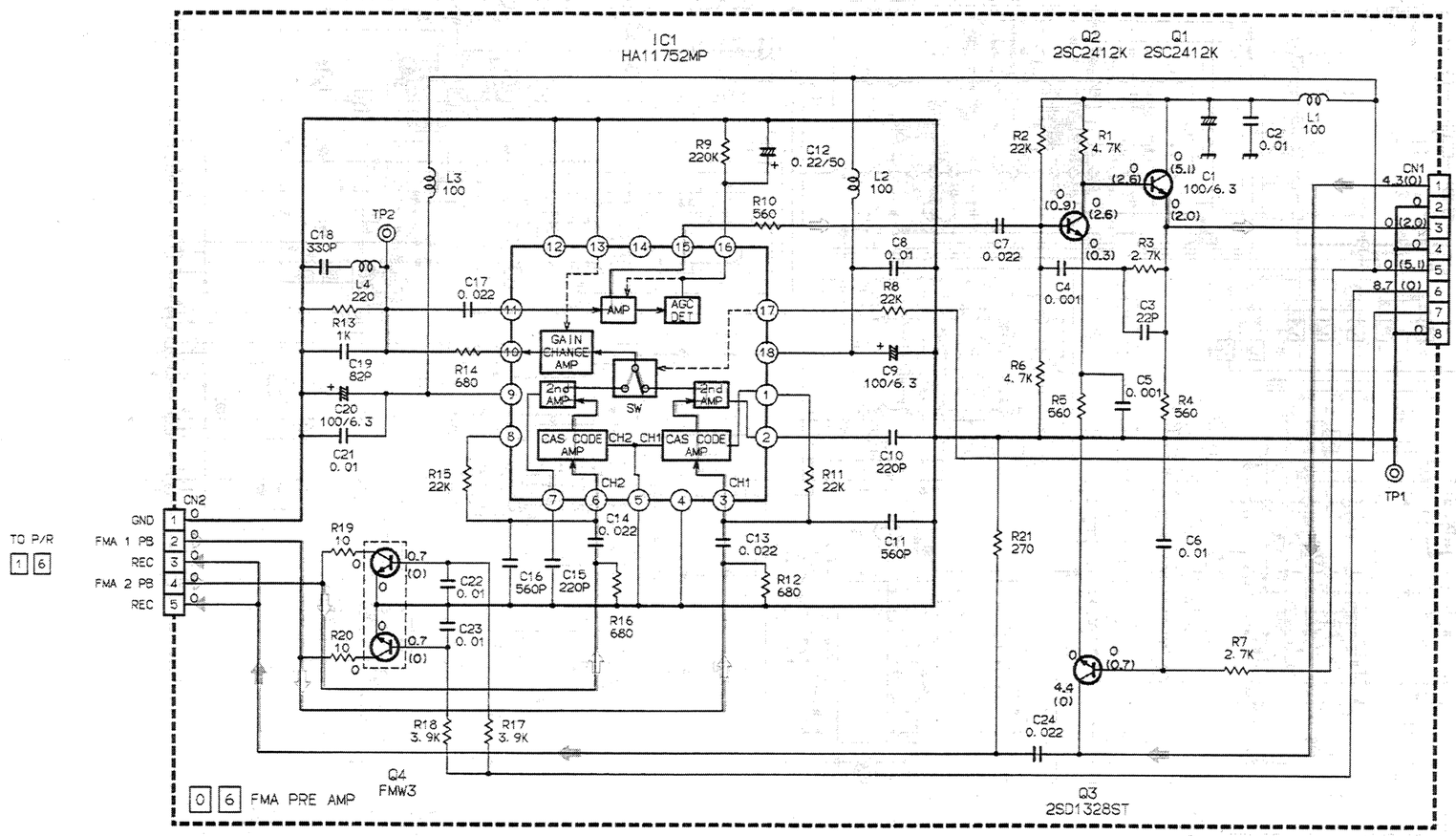
NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are 2SC2978C.
5. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.

Following symbols in schematic indicate circuit part accrding to mode.

S-VHS:
VHS

RECORDING SIGNAL PATH
PLAYBACK SIGNAL PATH
REC PLAY SIGNAL PATH

4.26 FMA PREAMP SCHEMATIC DIAGRAM

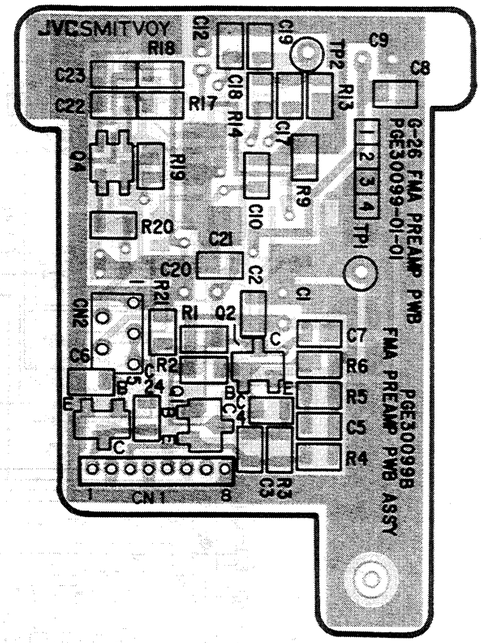


NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.

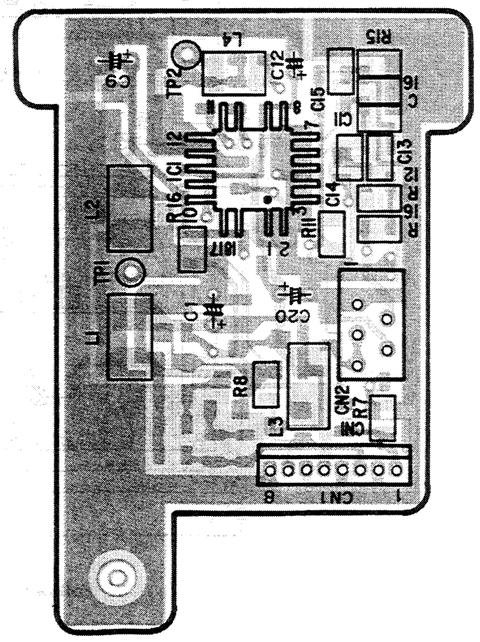
Following symbls in schematic indicate circuit path accrding to mode.

4.27 FMA PREAMP CIRCUIT BOARD

— Pattern side —

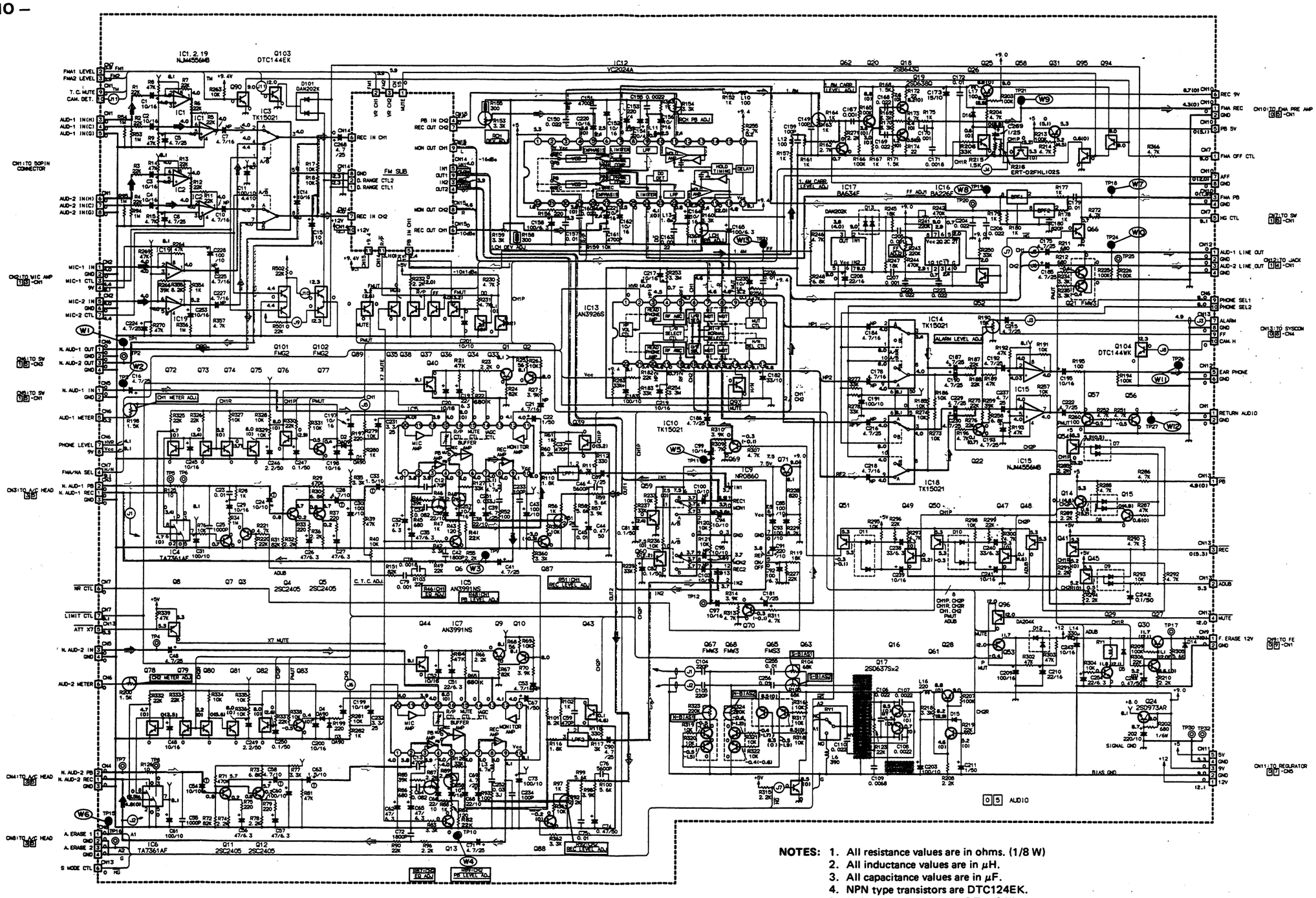


— Parts side —



4.28 AUDIO/FM SUB SCHEMATIC DIAGRAM

– AUDIO –

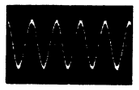
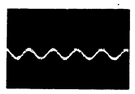
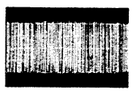
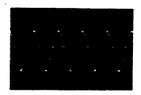


Following symbls in schematic indicate circuit path accrding to mode.

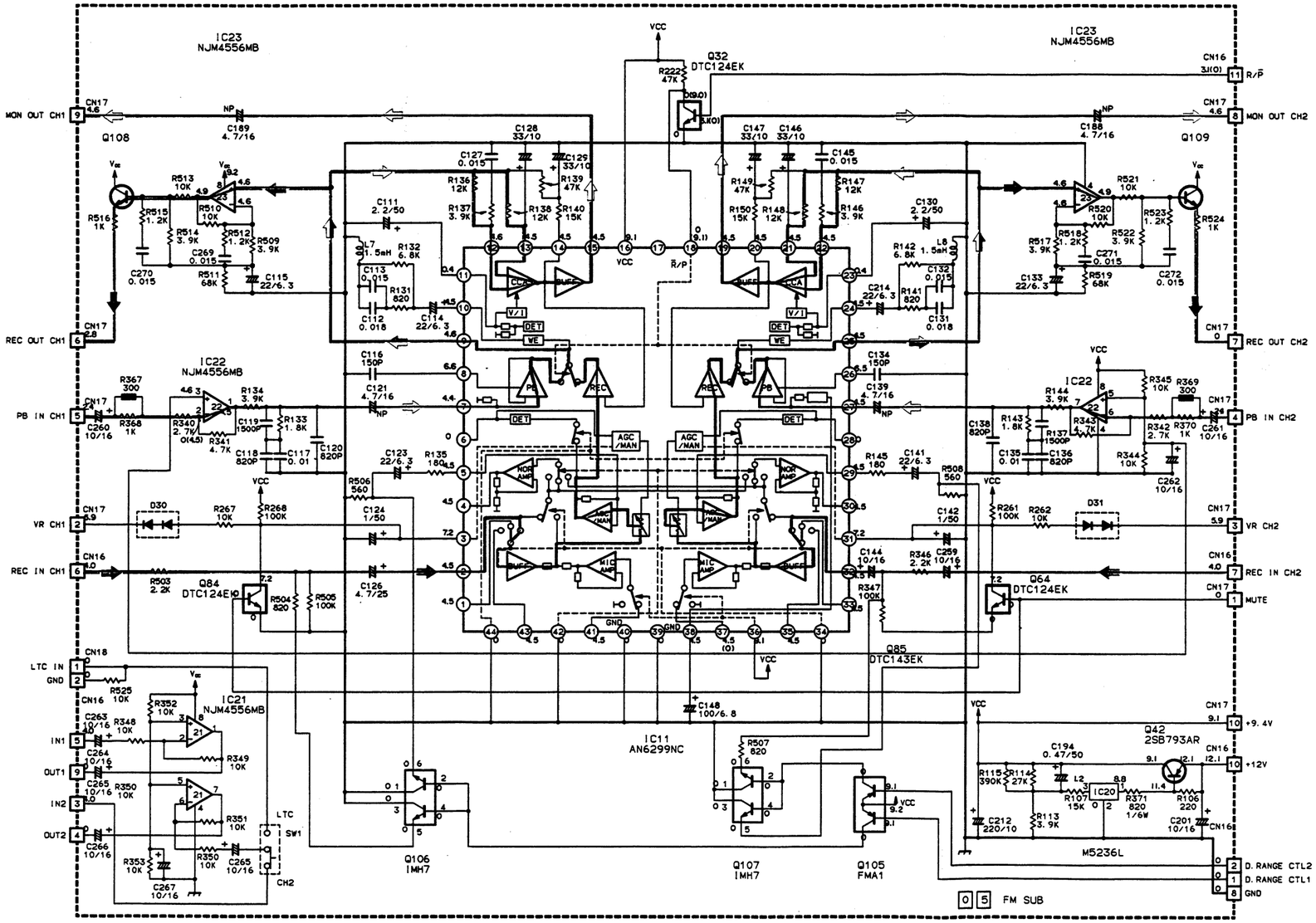
VHS:
- ⇒ RECORDING SIGNAL PATH
- ⇒ PLAYBACK SIGNAL PATH
- ⇒ REC/PLAY SIGNAL PATH

NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are DTC124EK.
5. PNP type transistors are DTA124EK.
6. NPN type transistors are 2SD601.
7. PNP type transistors are 2SA1037K.
8. All diodes are DAP202K.
9. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.
10. Shaded (▩) parts are critical for safety.
    Replace only with specified part numbers.

– MAIN WAVEFORMS OF AUDIO CIRCUIT –

W1  TP1 0.2 Vp-p	**W2**  TP3 48 mVp-p [NORM AUD]	**W3**  TP9 1.5 Vp-p [REC]
W4  TP10 1.6 Vp-p [REC]	**W5**  TP11 0.6 Vp-p	**W6**  TP15 4.0 Vp-p [REC]
W7  TP18 0.7 Vp-p [PB]	**W8**  TP20 0.2 Vp-p [PB]	**W9**  TP21 1.5 Vp-p [Hi-Fi REC]
W10  TP24 1.0 Vp-p [REC]	**W11**  TP26 0.6 Vp-p	**W12**  TP27 1.5 Vp-p [REC]
W12  TP27 1.6 Vp-p [PB]	**W13**  TP31 36 mVp-p/25 Hz [REC]	**W13**  TP31 4.0 Vp-p/25 Hz [PB]

– FM SUB –



NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. All diodes are DA204K.
5. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.

Following symbols in schematic indicate circuit part accrding to mode.

- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

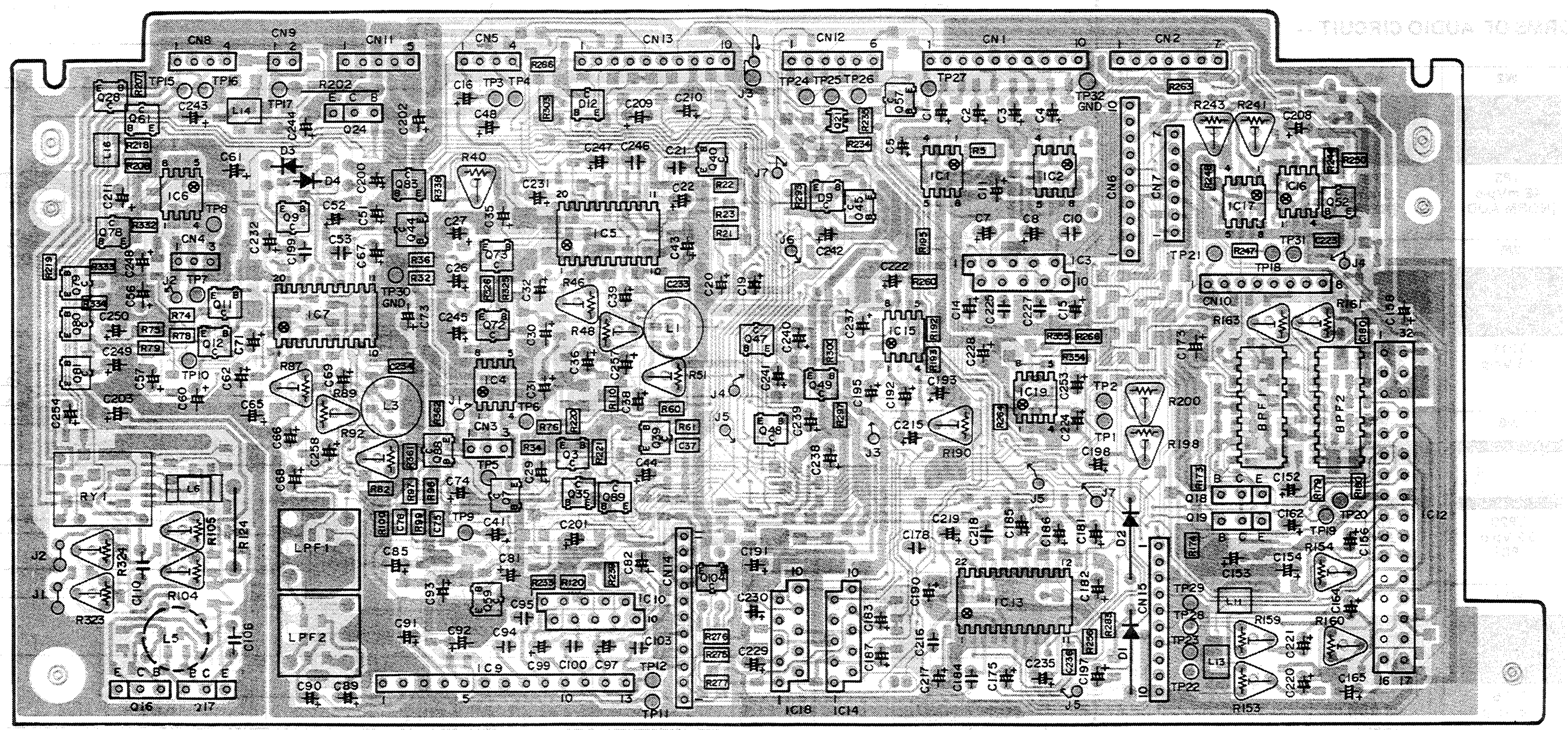
6

4.29 AUDIO/FM SUB CIRCUIT BOARD

5

– AUDIO –

– Front –



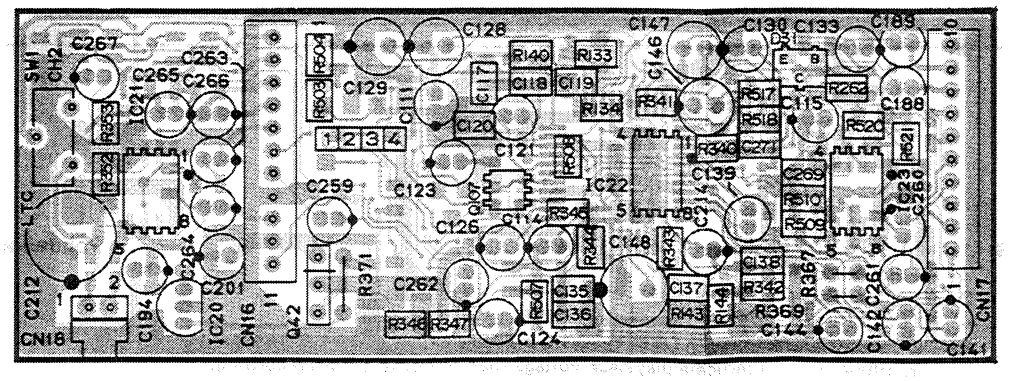
4

3

2

– FM SUB –

– Front –

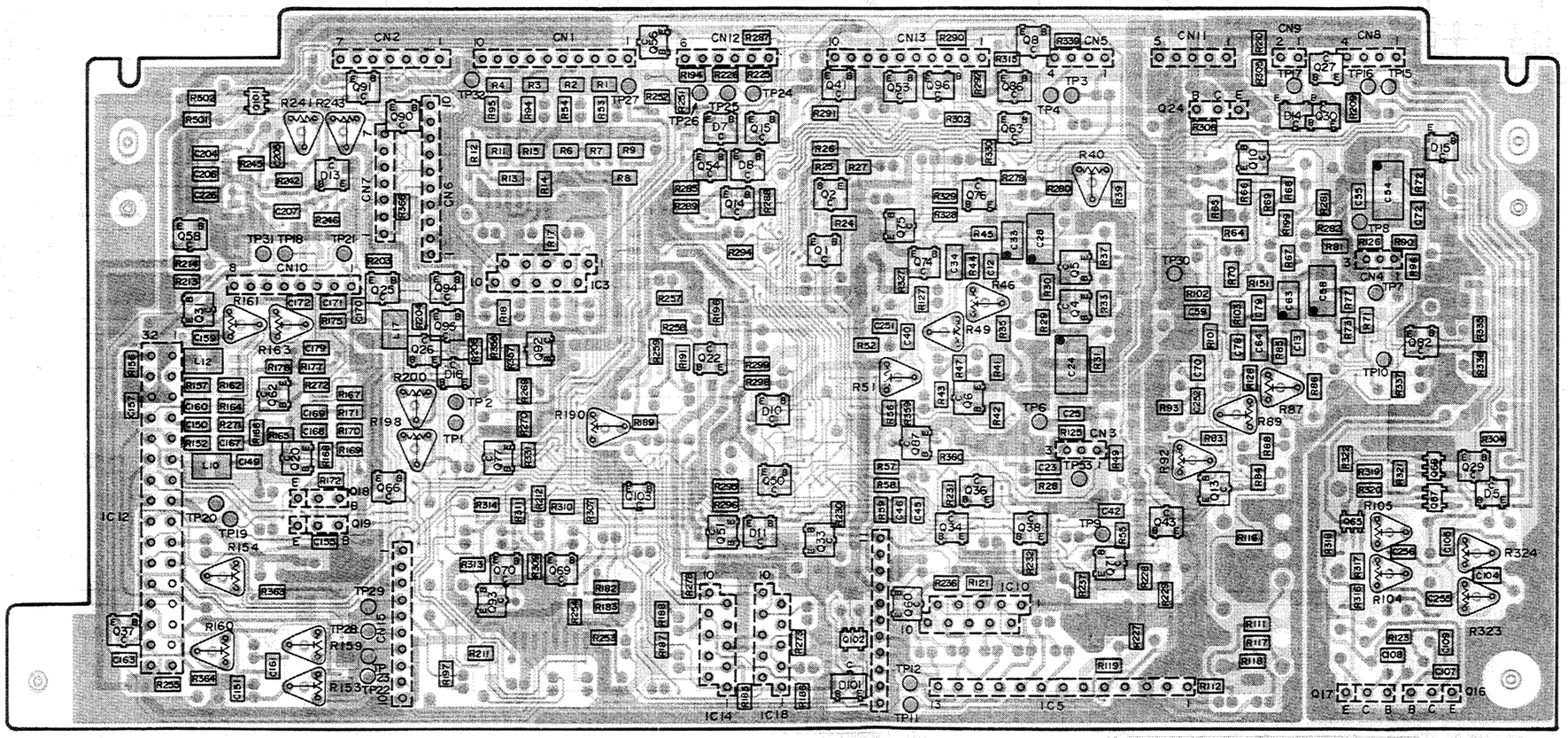


1

A B C 4-26 4-26 E F G H

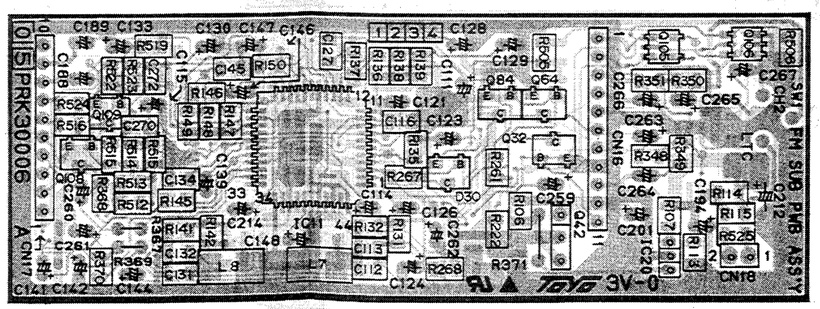
– AUDIO –

– Rear –

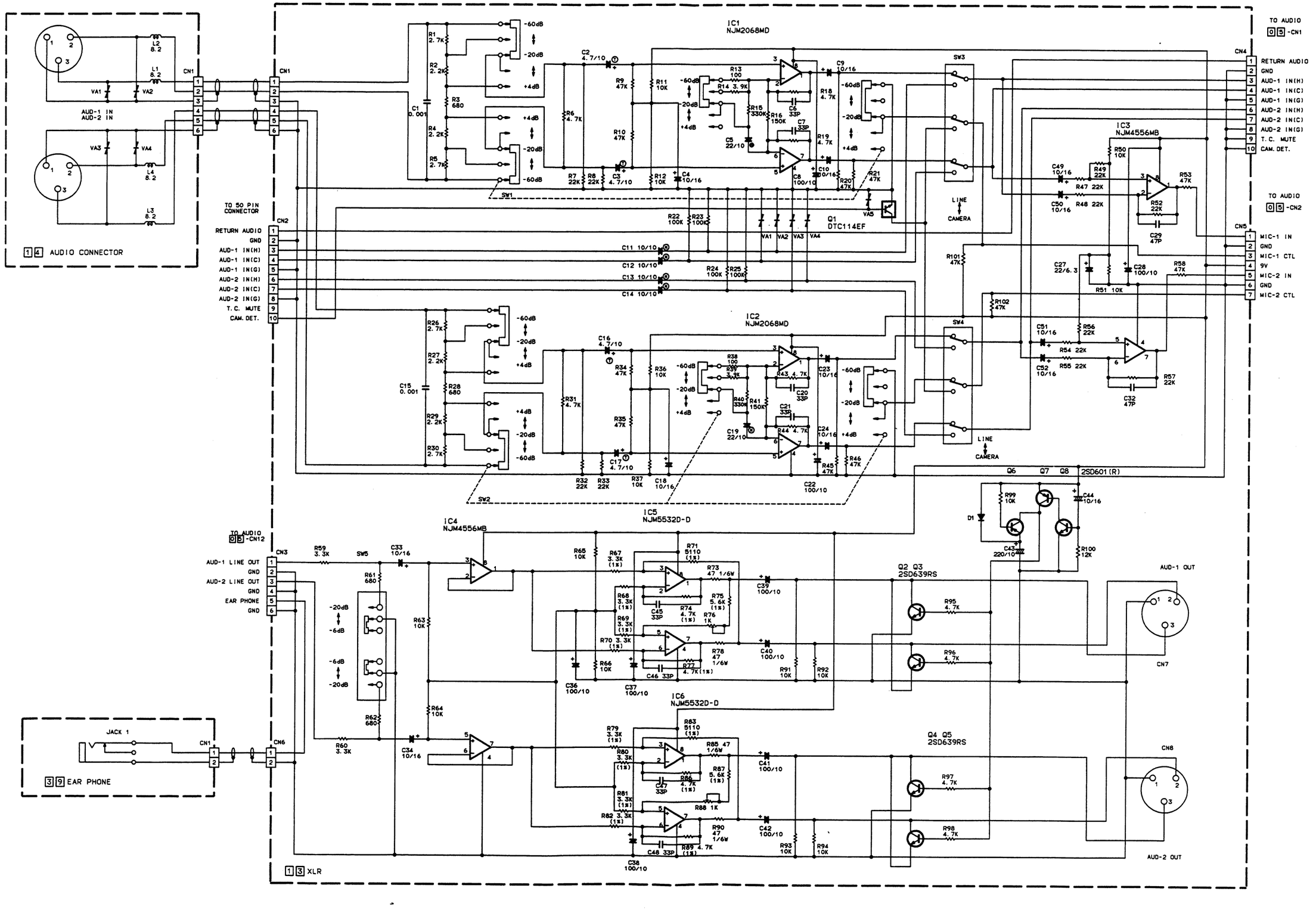


– FM SUB –

– Rear –

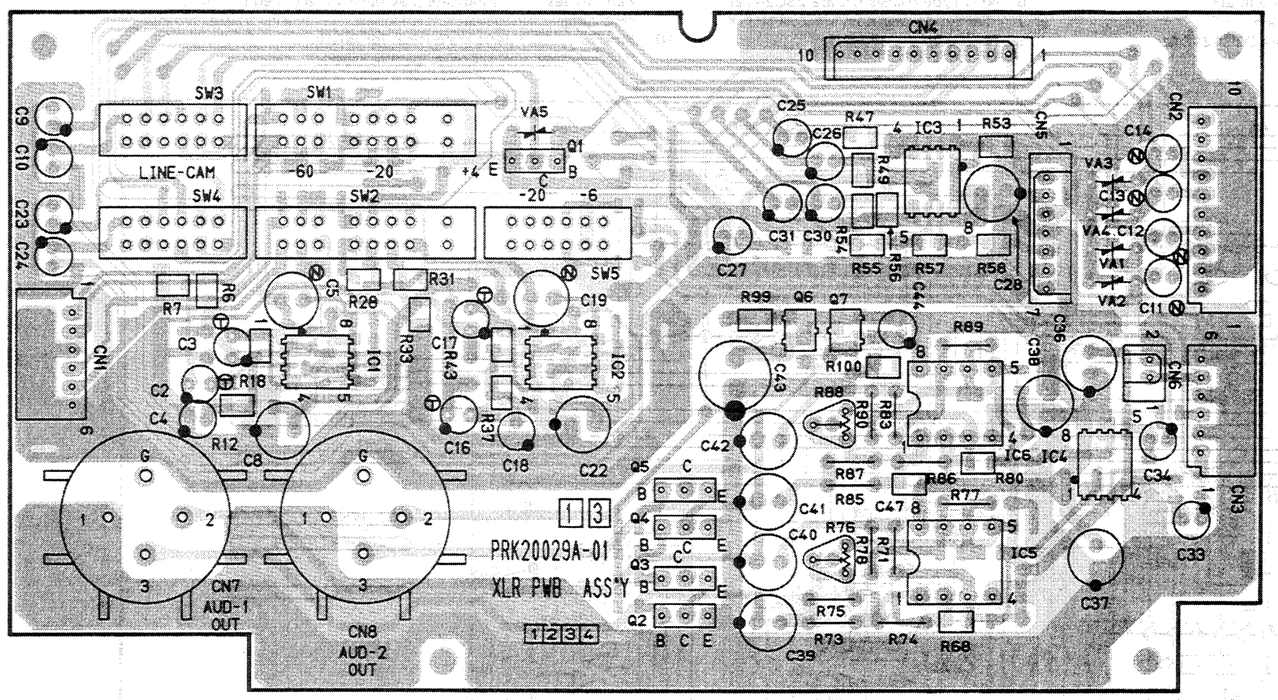


4.30 XLR/AUDIO CONNECTOR/EARPHONE SCHEMATIC DIAGRAM

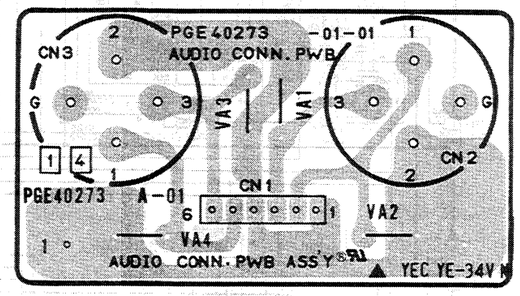


4.31 XLR/AUDIO CONNECTOR CIRCUIT BOARD

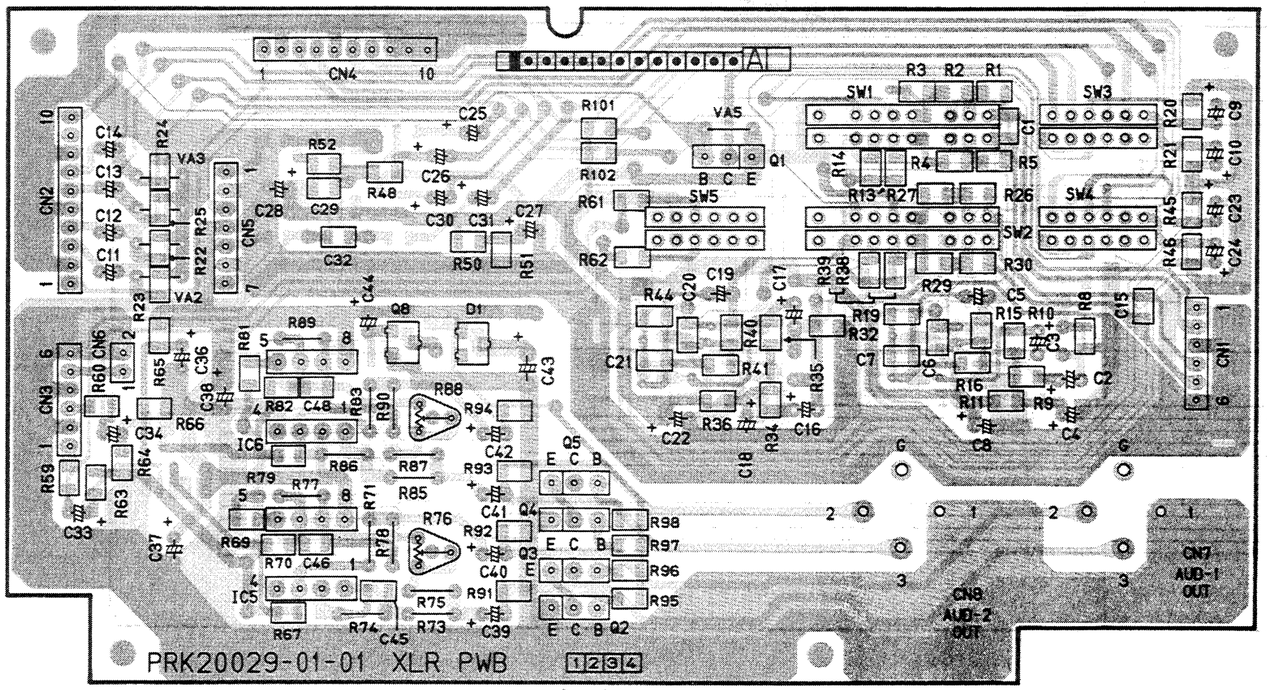
– XLR – – Front –



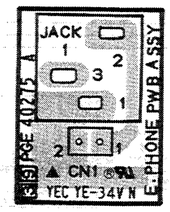
– AUDIO CONNECTOR –



– XLR – – Rear –

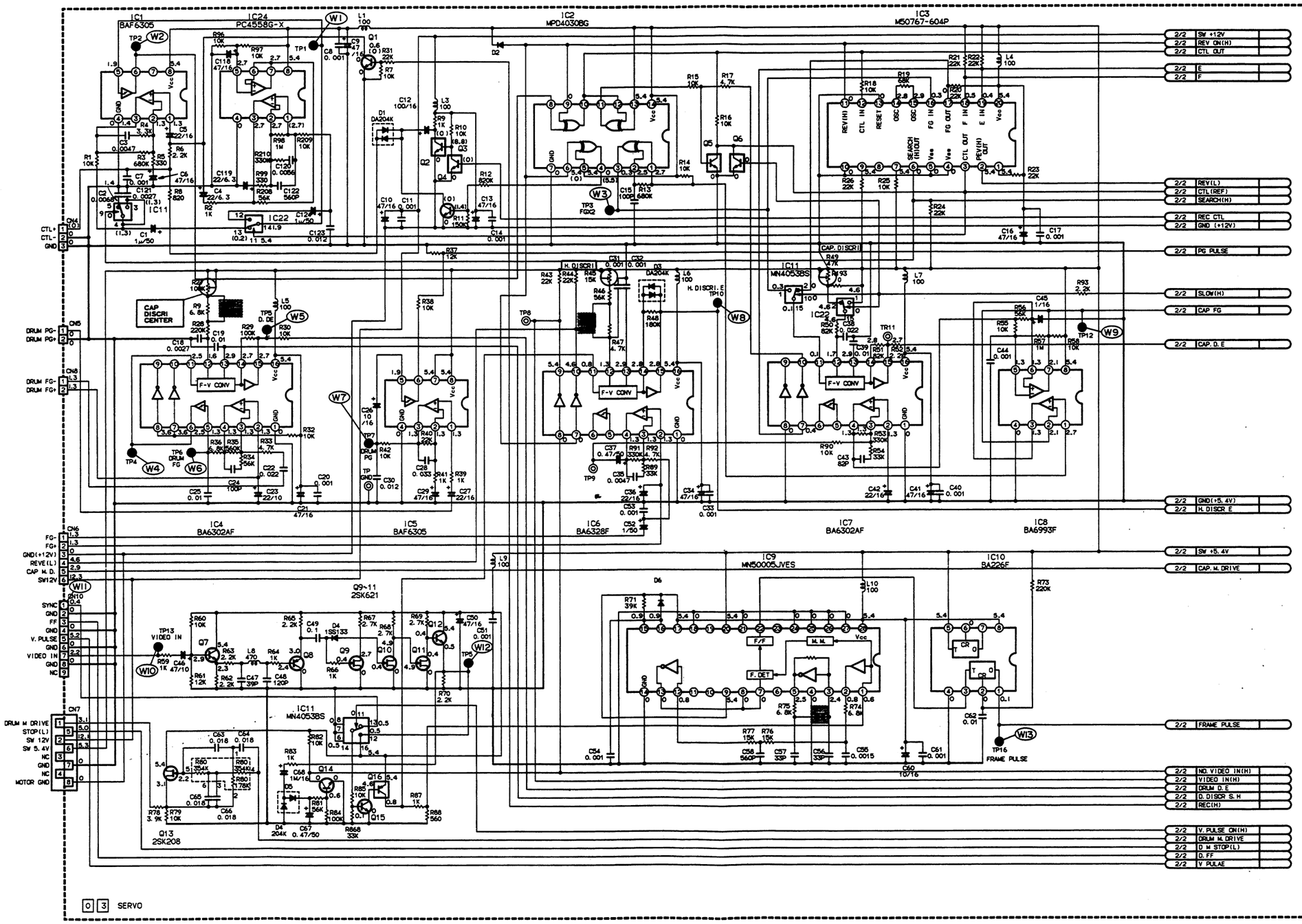


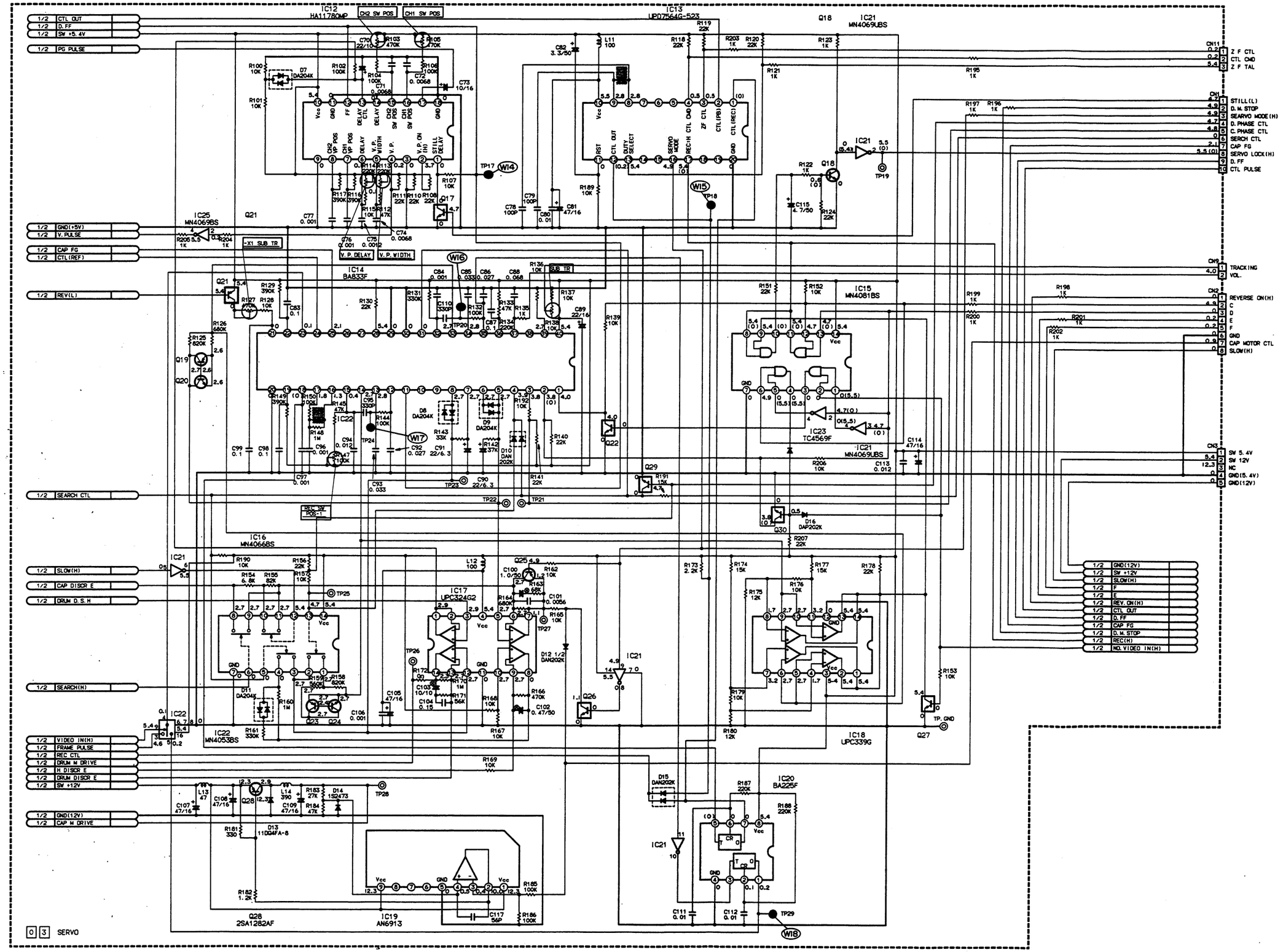
– EARPHONE –



4.32 SERVO SCHEMATIC DIAGRAM

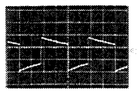
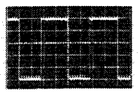
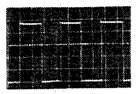
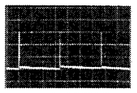
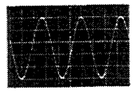
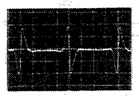
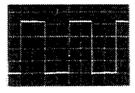
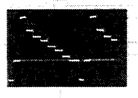
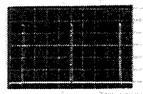
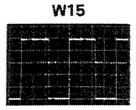
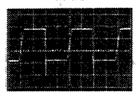
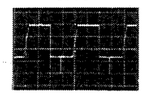
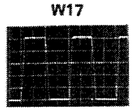
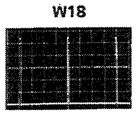
NOTES:
1. All resistance values are in ohms. (1/8 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are DTC124EK.
5. PNP type transistors are DTA124EK.
6. NPN type transistors are 2SC2412K.
7. PNP type transistors are 2SA1037K.
8. All diodes are 1SS133.
9. DC voltages measured with DVM in S-VHS mode. Parentheses ( ) indicate play-back voltage then this differs from recording.
10. Shaded (▒) parts are critical for safety. Replace only with specified part numbers.



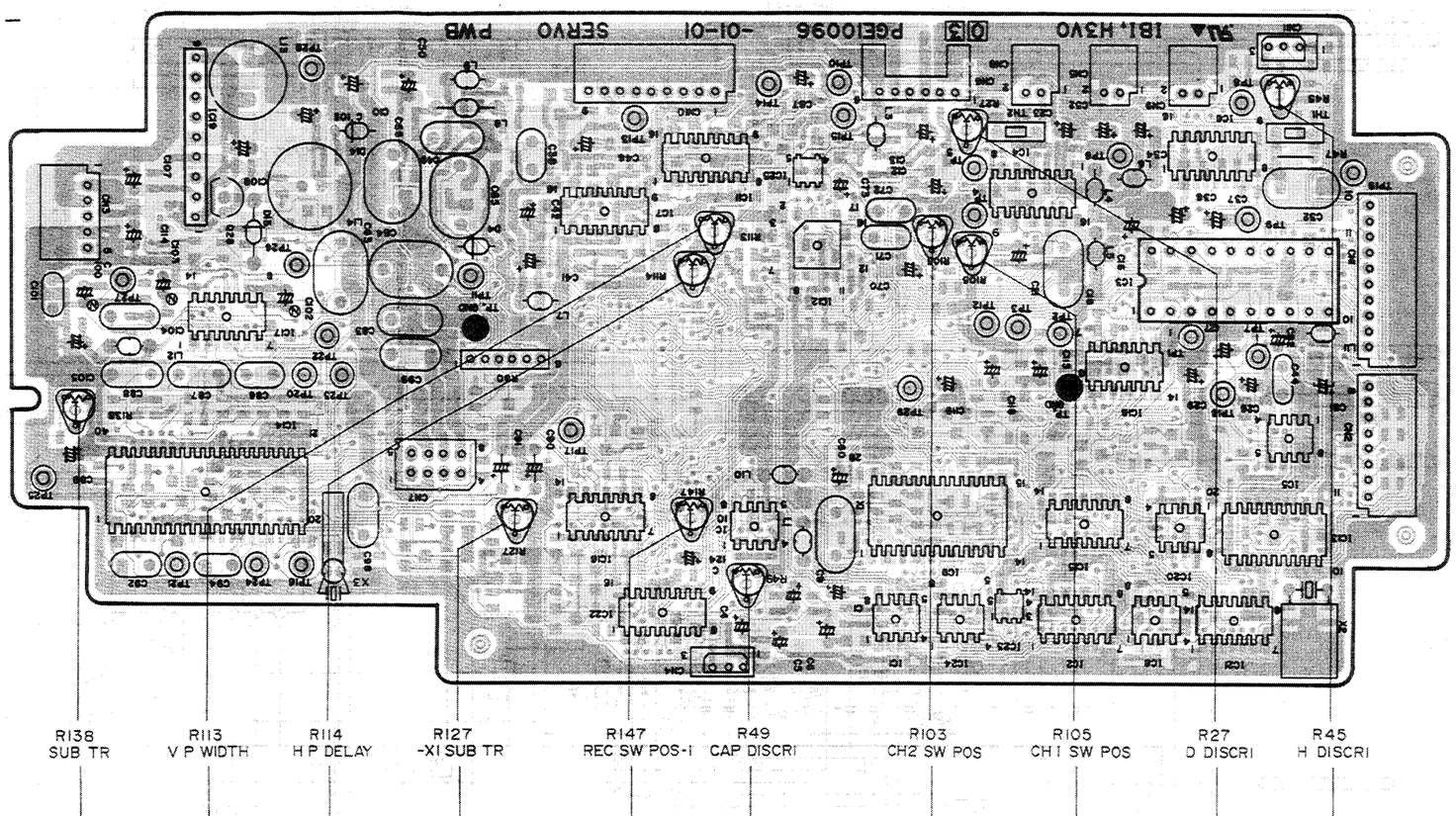

IC12 HA11780MP
IC13 UPD7564G-523
IC21 MN4069UBS
IC25 MN4069BS
IC14 BA833F
IC15 MN4081BS
IC16 MN4066BS
IC17 UPC324G2
IC18 UPC339G
IC20 BA225F
IC22 MN4053BS
IC23 TC4569F
IC19 AN6913
Q18
Q21
Q28 2SA1282AF
CH2 SW POS
CH1 SW POS
1/2 CTL OUT
1/2 D.FF
1/2 SW +5.4V
1/2 PG PULSE
1/2 GND(+5V)
1/2 V. PULSE
1/2 CAP FG
1/2 CTL(REF)
1/2 REV(L)
1/2 SEARCH CTL
1/2 SLOW(H)
1/2 CAP DISCR E
1/2 DRUM D.S.H
1/2 SEARCH(H)
1/2 VIDEO IN(H)
1/2 FRAME PULSE
1/2 REC CTL
1/2 DRUM M DRIVE
1/2 H DISCR E
1/2 DRUM DISCR E
1/2 SW +12V
1/2 GND(12V)
1/2 CAP M DRIVE
V. P. DELAY
V. P. WIDTH
SUB TR
REC SW POS-1
CN11 Z F CTL / CTL CMD / Z F TAL
CN1 STILL(L) / D. M. STOP / SEARVO MODE(H) / D. PHASE CTL / C. PHASE CTL / SERCH CTL / CAP FG / SERVO LOCK(H) / D. FF / CTL PULSE
CN5 TRACKING / VOL.
CN2 REVERSE ON(H) / C / D / E / F / GND / CAP MOTOR CTL / SLOW(H)
CN3 SW 5.4V / SW 12V / NC / GND(5.4V) / GND(12V)
1/2 GND(12V)
1/2 SW +12V
1/2 SLOW(H)
1/2 F
1/2 E
1/2 REV. ON(H)
1/2 CTL OUT
1/2 D.FF
1/2 CAP FG
1/2 D.M. STOP
1/2 REC(H)
1/2 NO. VIDEO IN(H)
0 3 SERVO

4.33 SERVO CIRCUIT BOARD

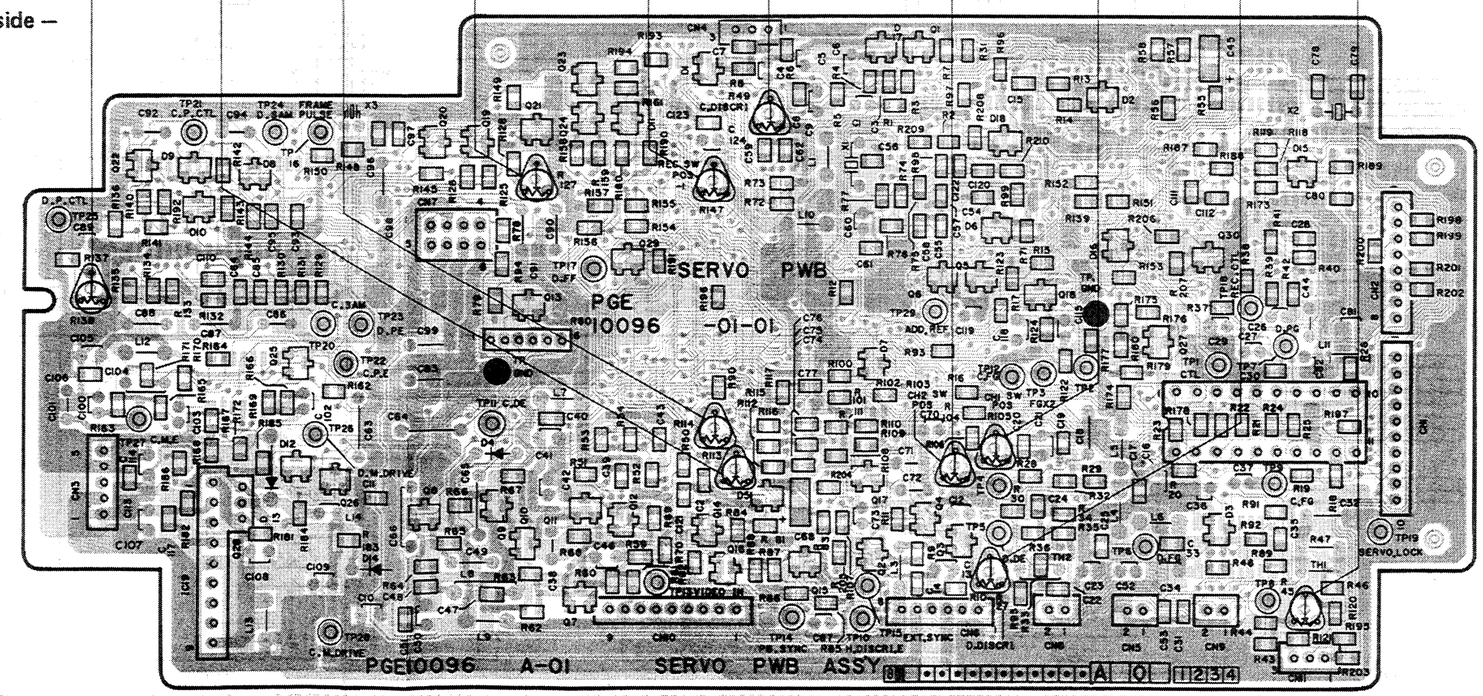
— MAIN WAVEFORMS OF SERVO CIRCUIT —

W1  TP1 1.4 V/25 Hz [REC]	**W1**  TP1 0.9 Vp-p/25 Hz [PB]	**W2**  TP2 5.2 Vp-p/25 Hz
W3  TP3 5.5 Vp-p/1 kHz	**W4**  TP4 4.8 Vp-p/1.5 kHz [REC]	**W5**  TP5 0.2 Vp-p/1.5 kHz
W6  TP6 0.5 Vp-p/1.5 kHz	**W7**  TP7 1.9 Vp-p/50 Hz	**W8**  TP10 0.6 Vp-p/15 Hz
W9  TP12 4.2 Vp-p/0.5 kHz	**W10**  TP13 1.0 Vp-p	**W11**  TP14 5.4 Vp-p/15 kHz
W12  TP15 4.8 Vp-p/15 kHz	**W13**  TP16 4.8 Vp-p/25 Hz	**W14**  TP17 5.2 Vp-p/25 Hz
W15  TP18 4.9 Vp-p/25 Hz [REC]	**W16**  TP20 7.5 Vp-p/25 Hz [REC]	**W16**  TP20 7.9 Vp-p/25 Hz [PB]
W17  TP24 5.1 Vp-p/25 Hz	**W18**  TP29 5.4 Vp-p/25 Hz	

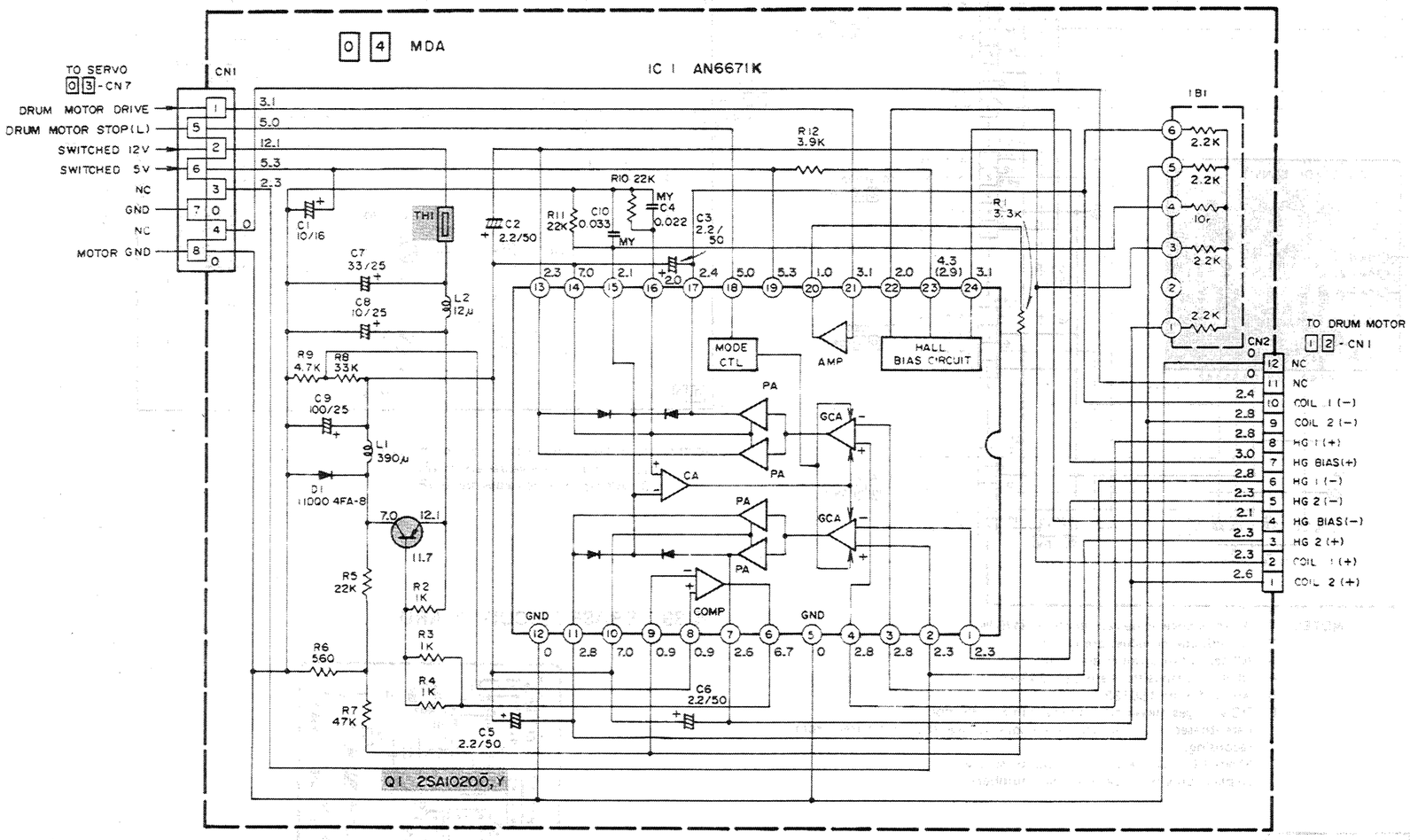
— Parts side —



— Pattern side —

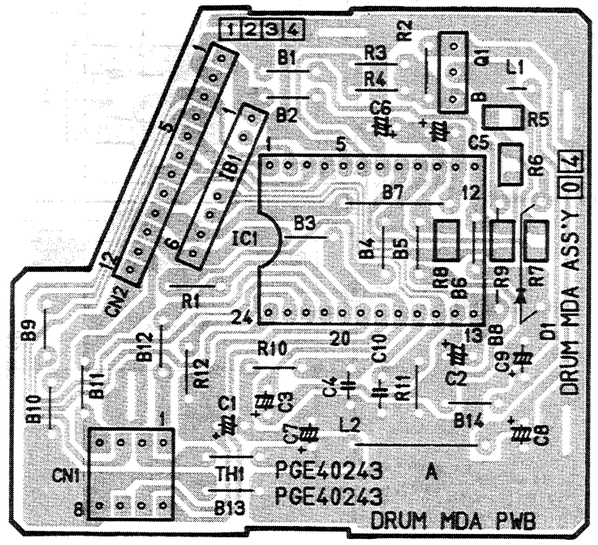


4.34 MDA SCHEMATIC DIAGRAM

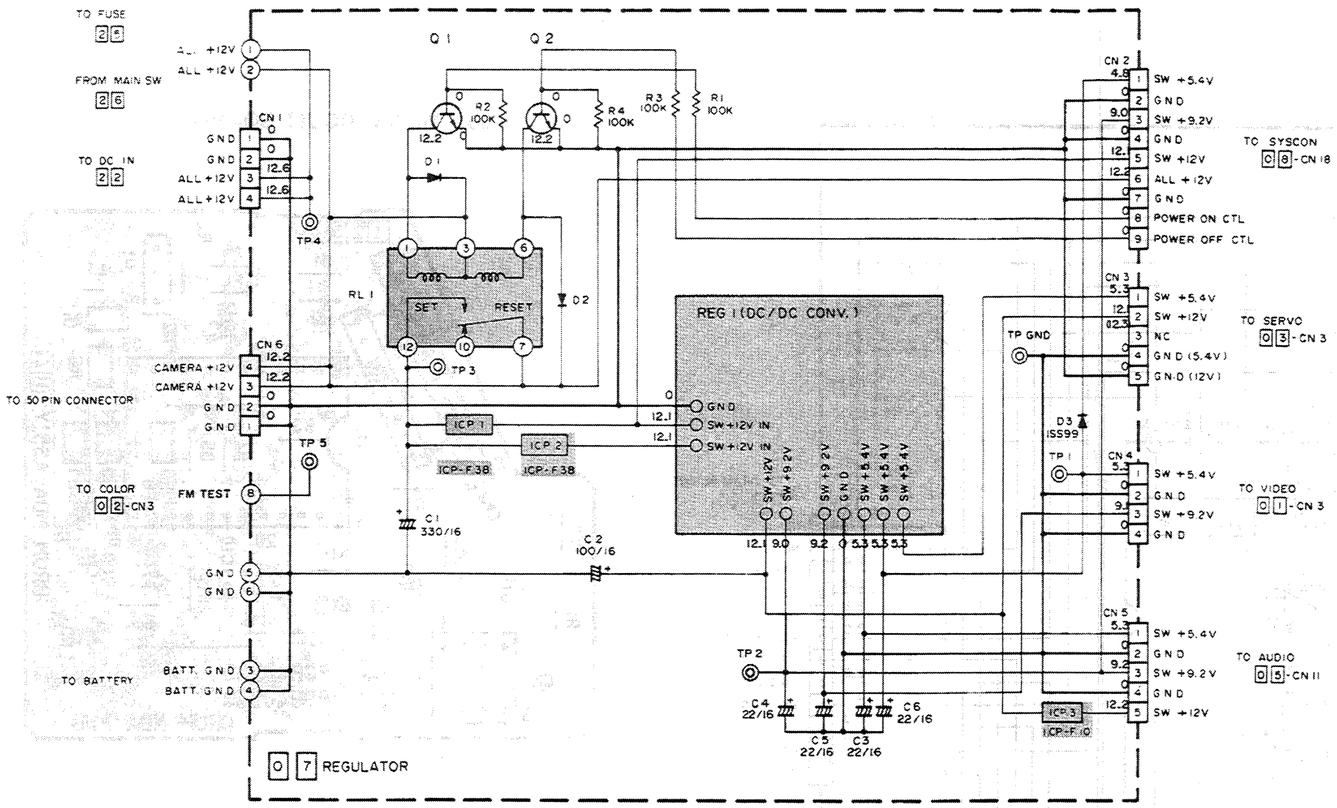


NOTES:
1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. DC voltages measured with DVM in S-VHS mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.
5. Shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.

4.35 MDA CIRCUIT BOARD

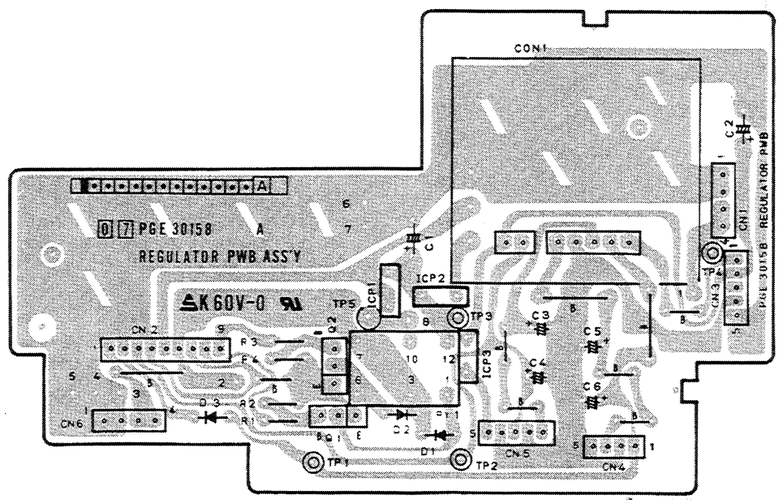


4.36 REGULATOR SCHEMATIC DIAGRAM

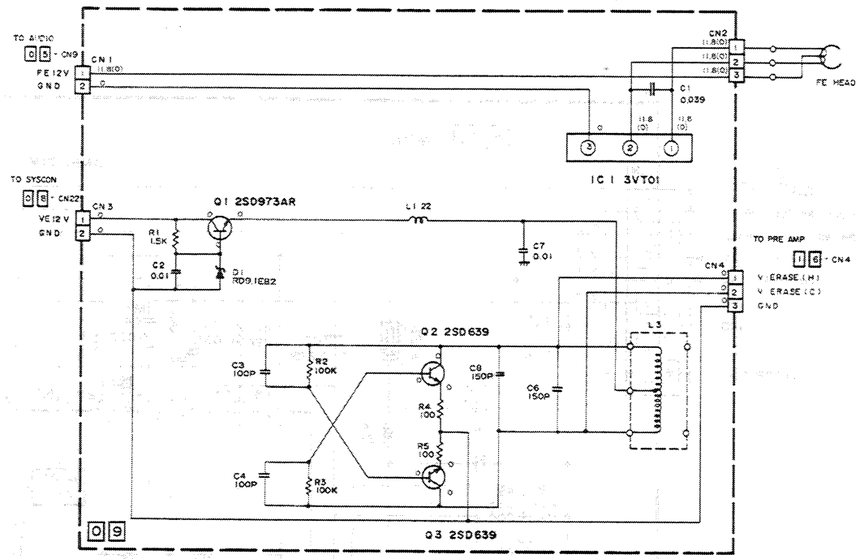


NOTES: 1. All resistance values are in ohms. (1/6 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are 2SC1545AB.
5. All diodes are 1SS133.
6. DC voltages measured with DVM in S-VHS mode.
Parentheses ( ) indicate play-back voltage then this differs from recording.
7. Shaded ( ) parts are critical for safety.
Replace only with specified part numbers.

4.37 REGULATOR CIRCUIT BOARD

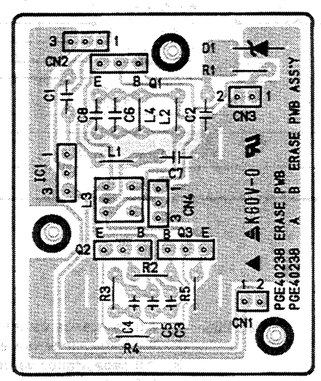


4.38 ERASE SCHEMATIC DIAGRAM

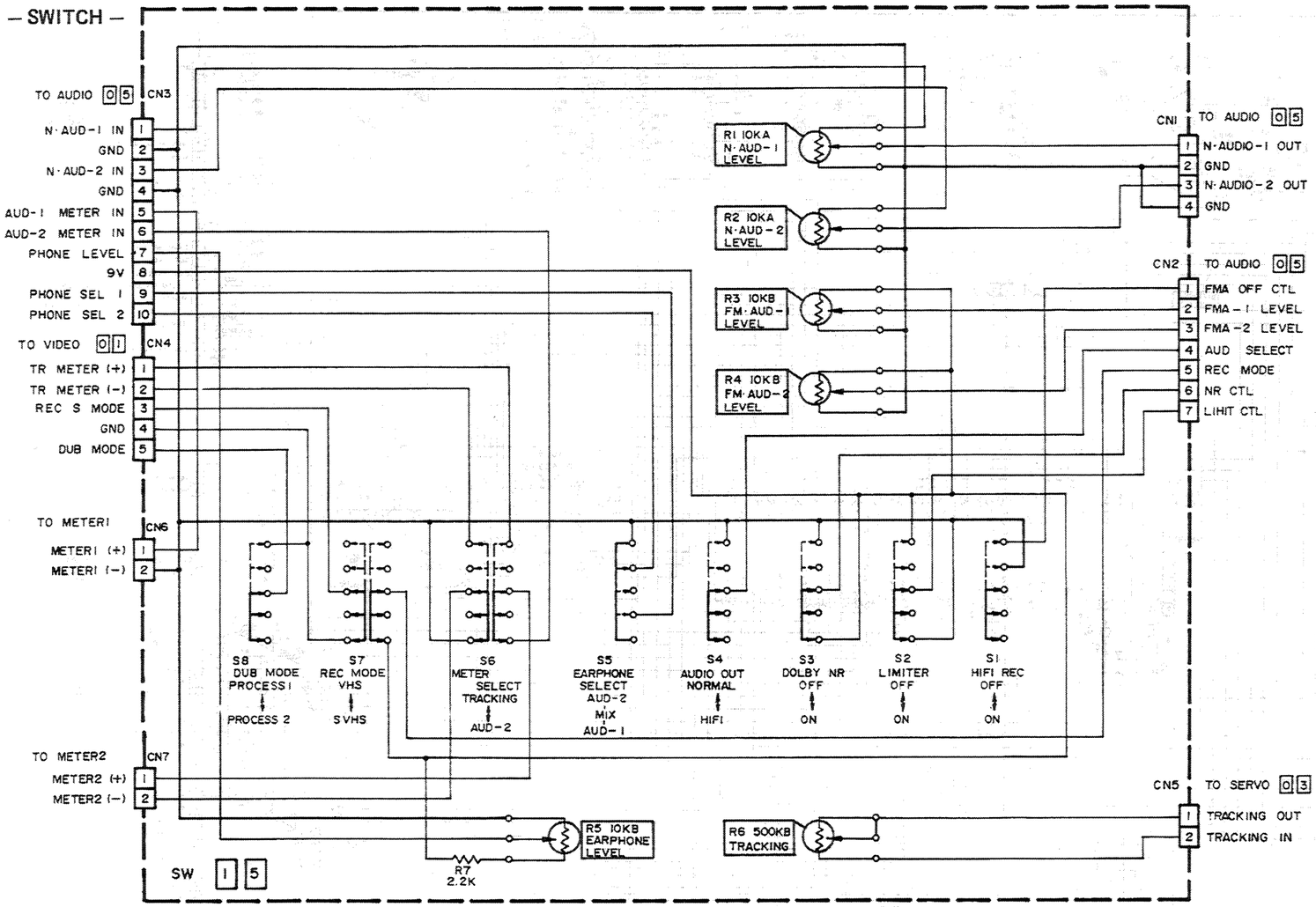


NOTES: 1. All resistance values are in ohms. (1/6 W).
2. All inductance values are in μF.
3. All capacitance values are in μF.

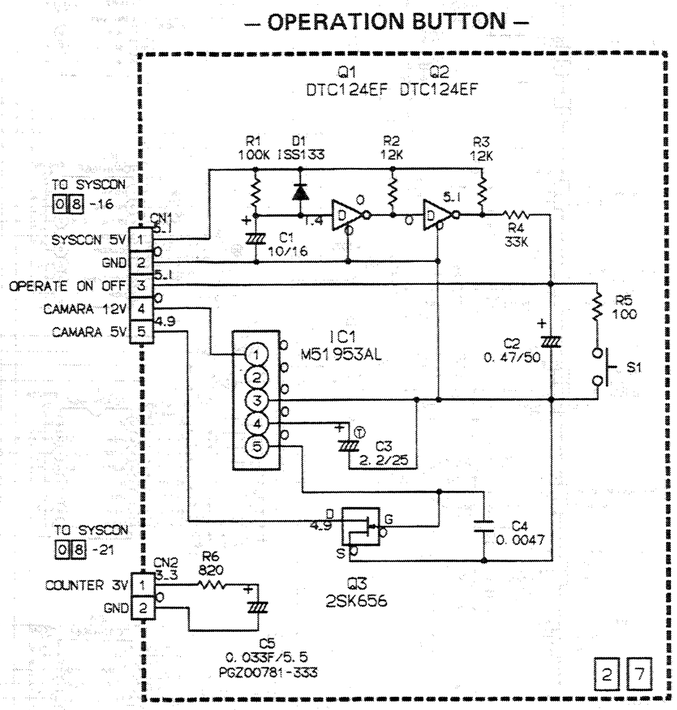
4.39 ERASE CIRCUIT BOARD



4.40 SWITCH/OPERATION BUTTON SCHEMATIC DIAGRAM



NOTE: All resistor values are in ohms. (1/8 W)

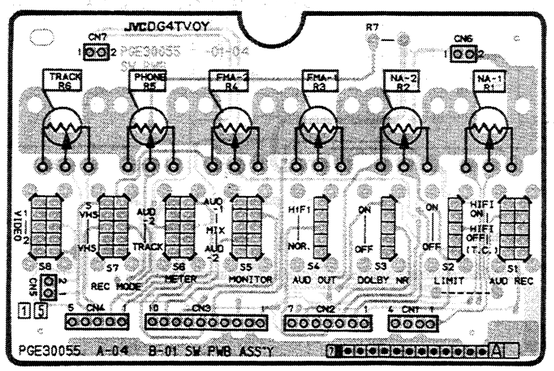


NOTES: 1. All resistor values are in ohms. (1/8 W)
2. All capacitance values are in μH.

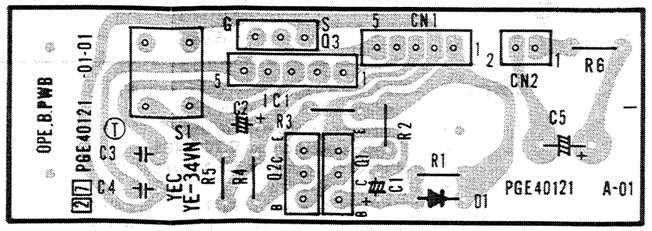
NOTE: DC voltages measured with DVM in OPERATE SW OFF mode.

4.41 SWITCH/OPERATION BUTTON CIRCUIT BOARD

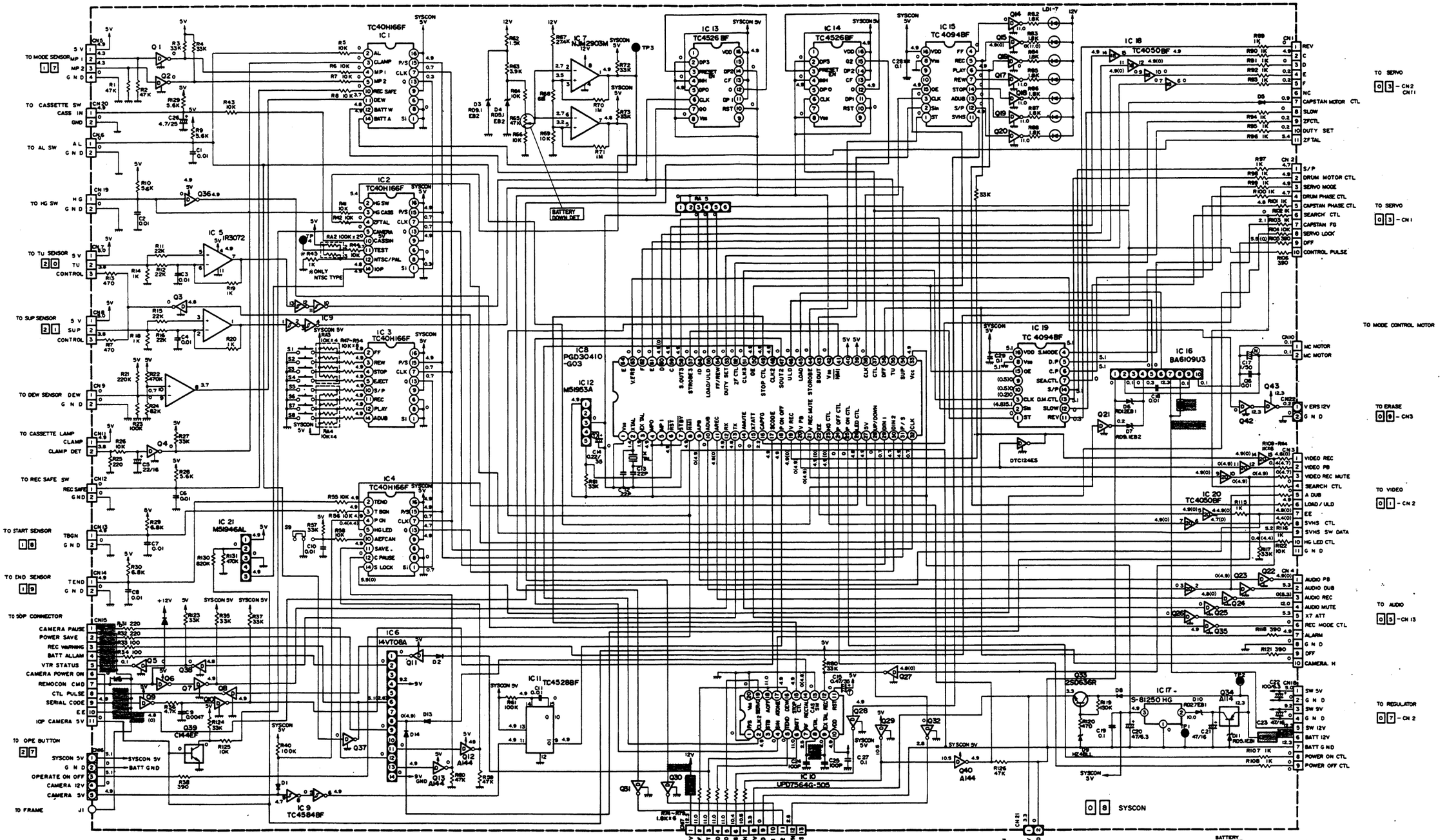
— SWITCH —



— OPERATION BUTTON —

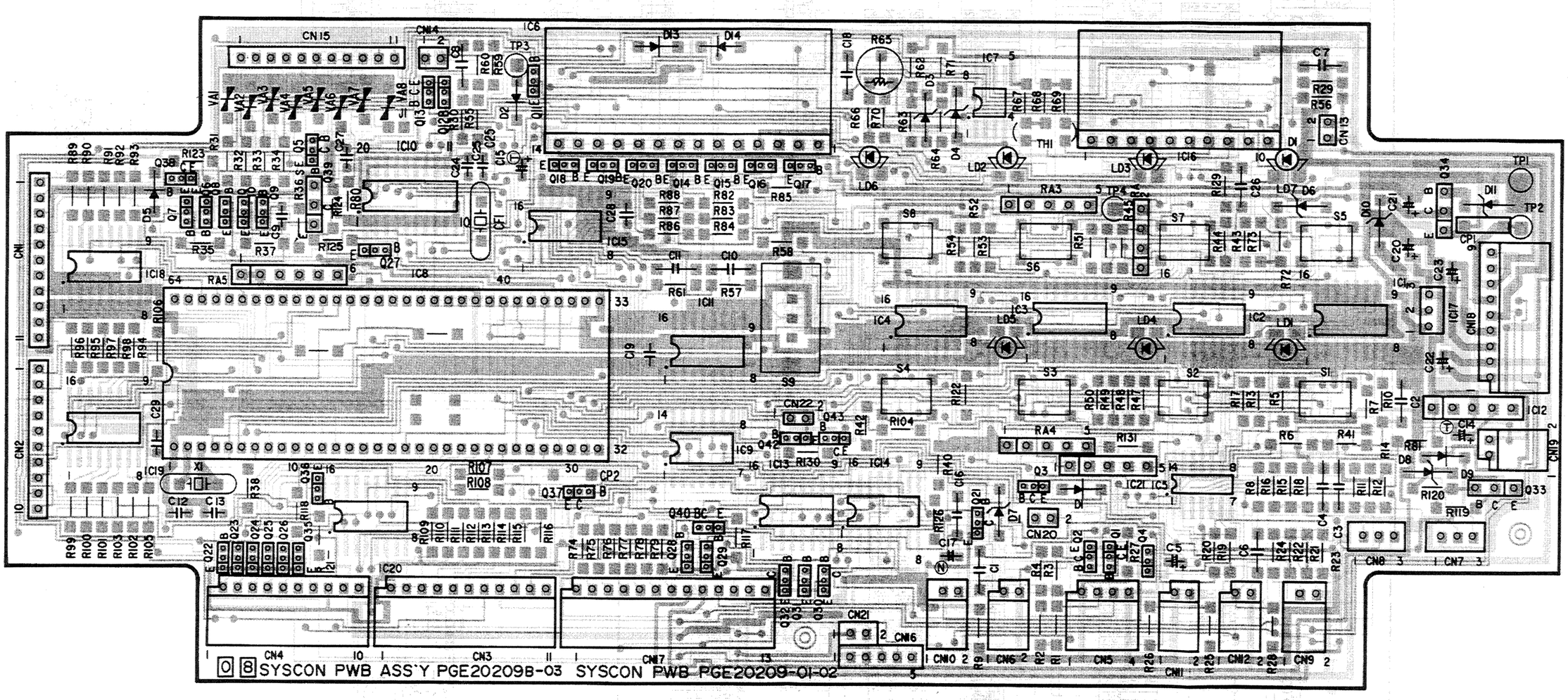


4.42 SYSCON SCHEMATIC DIAGRAM

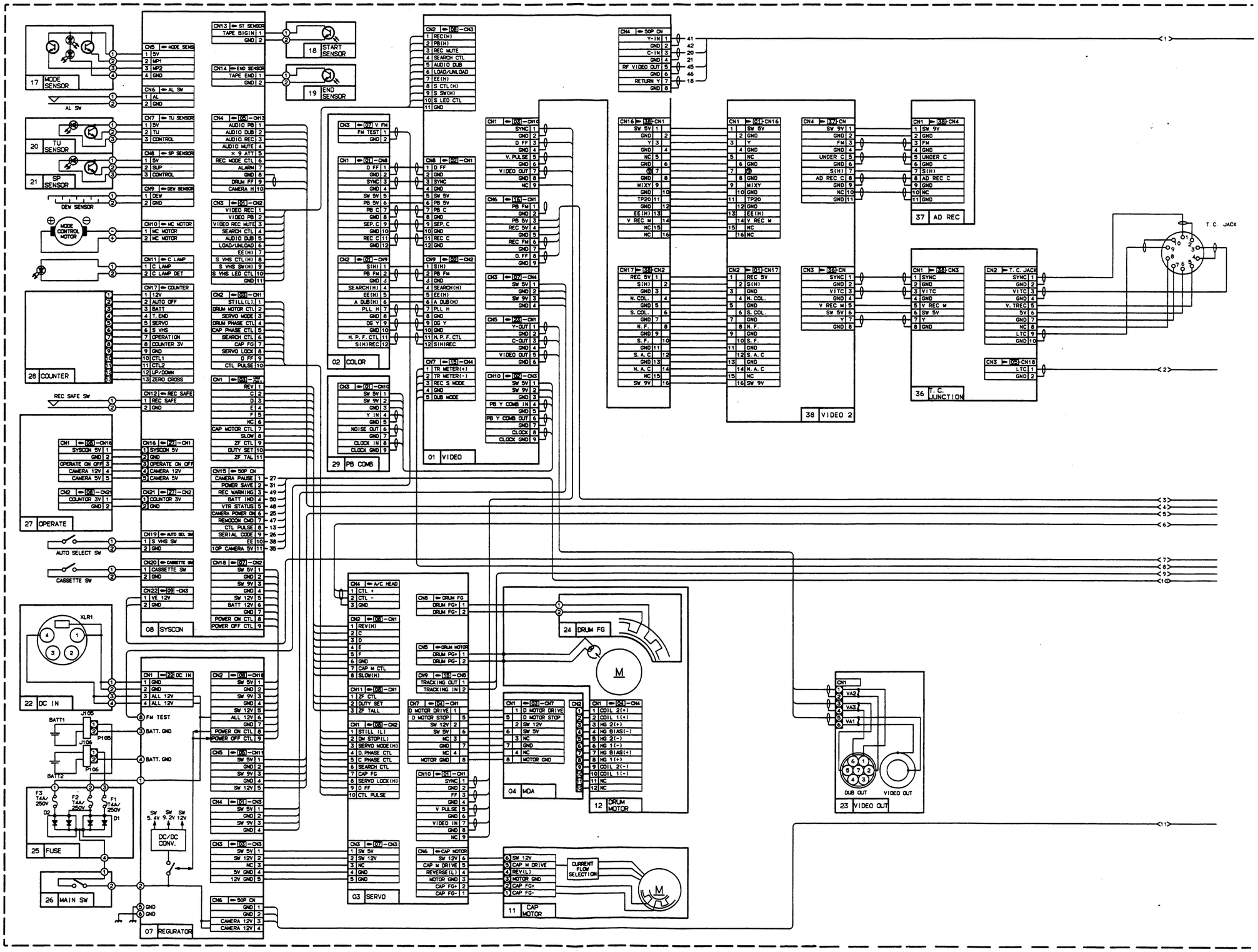


NOTES:
1. All resistance values are in ohms. (1/6 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are DTC124ES.
5. PNP type transistors are DTA124ES.
6. All diodes are 1SS133.
7. DC voltages measured with DVM in E-E mode.
   Parentheses ( ) indicate play-back voltage then this differs from recording.
8. Shaded (▒▒) parts are critical for safety.
   Replace only with specified part numbers.

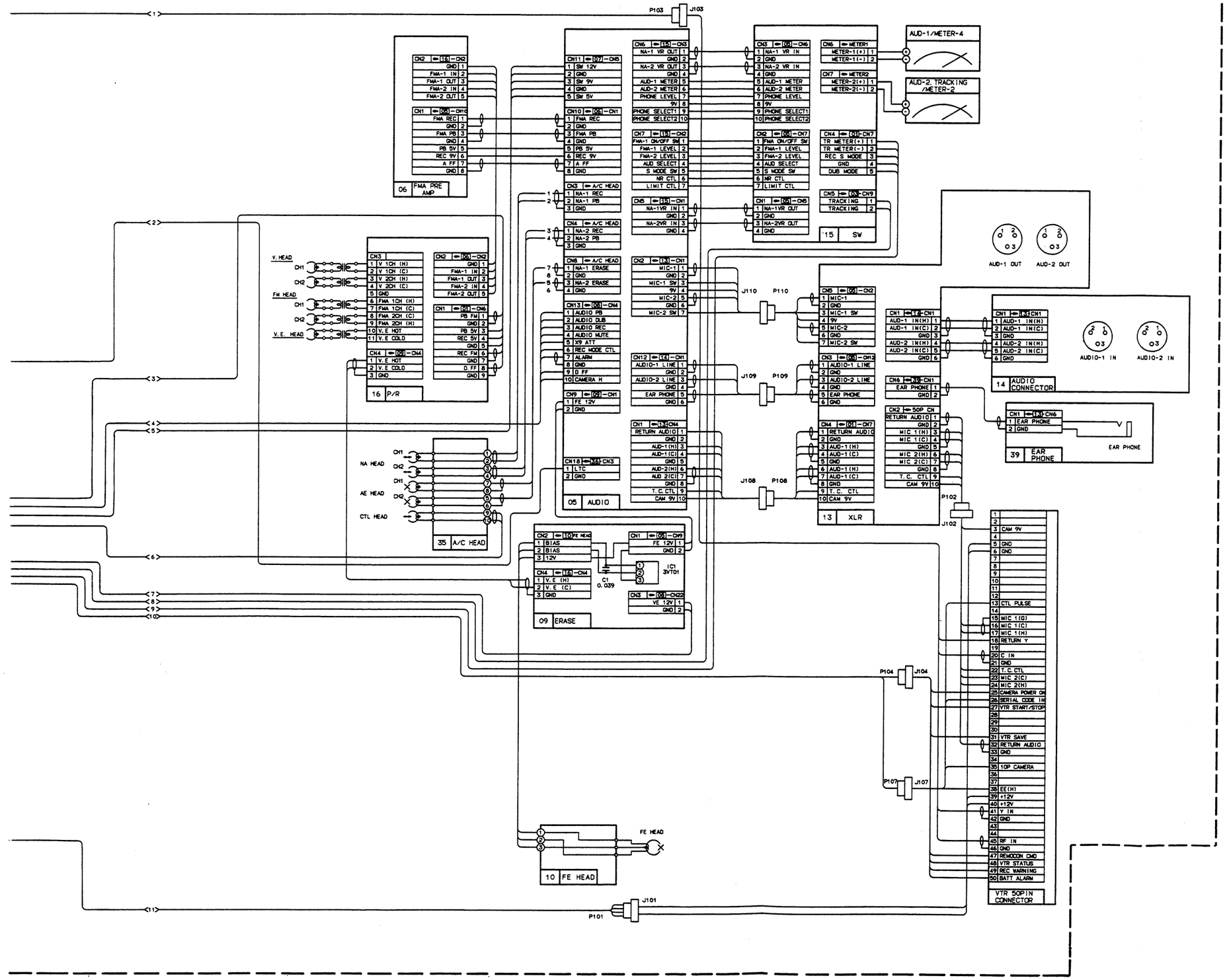
4.43 SYSCON CIRCUIT BOARD



4.44 OVERALL WIRING DIAGRAM

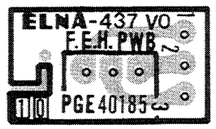


4-38

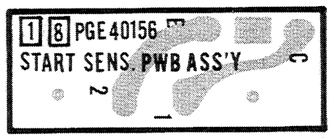

P103
J103
06 FMA PRE AMP
05 AUDIO
16 P/R
35 A/C HEAD
09 ERASE
10 FE HEAD
15 SW
13 XLR
14 AUDIO CONNECTOR
39 EAR PHONE
AUD-1/METER-4
AUD-2, TRACKING /METER-2
AUD-1 OUT
AUD-2 OUT
AUDIO-1 IN
AUDIO-2 IN
EAR PHONE
V. HEAD
FM HEAD
V. E. HEAD
NA HEAD
AE HEAD
CTL HEAD
FE HEAD
IC1 3VT01
C1 0.039
J110 P110
J109 P109
J108 P108
P102 J102
P104 J104
P107 J107
P101 J101
VTR 50PIN CONNECTOR

4.45 OTHER CIRCUIT BOARDS

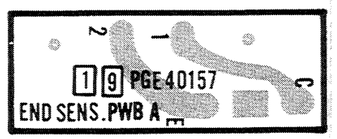
— F.E. HEAD 10 —



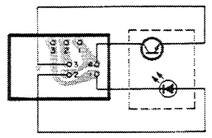
— START SENSOR 18 —



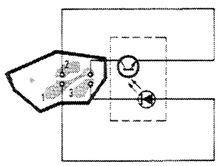
— END SENSOR 19 —



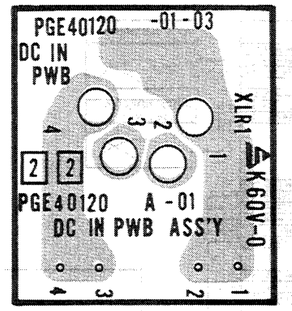
— TAKE-UP SENSOR 20 —



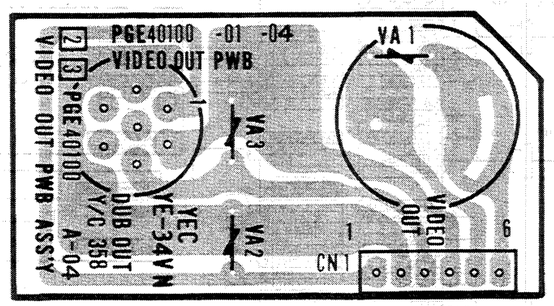
— SUPPLY SENSOR 21 —



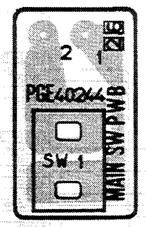
— DC IN 22 —



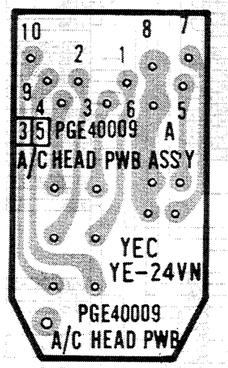
— VIDEO OUTPUT 23 —



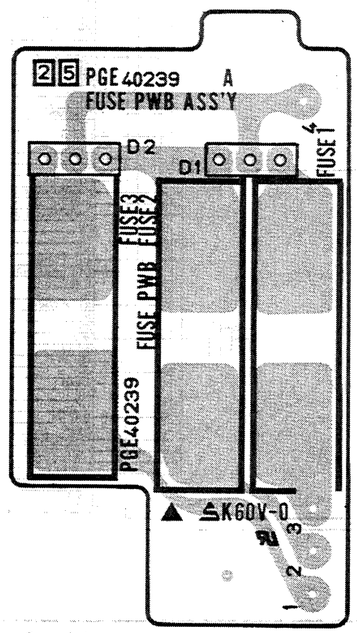
— MAIN SWITCH 26 —



— A/C HEAD 35 —



— FUSE 25 —



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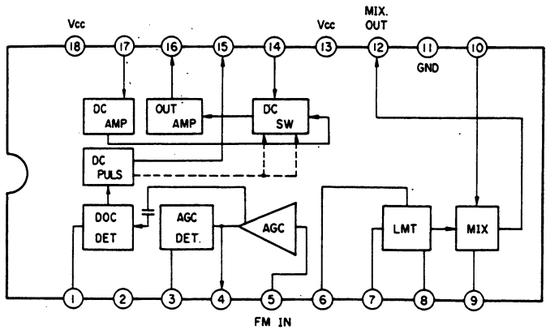
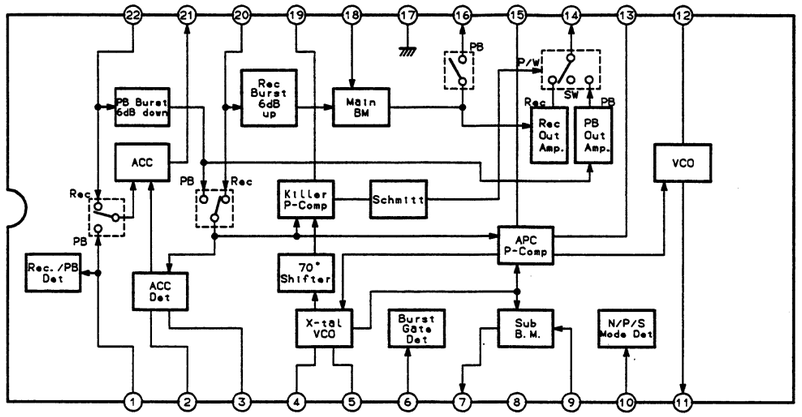
4.46 IC BLOCK DIAGRAMS

– AN6393 –

VTR Luminance Signal Processing Circuit

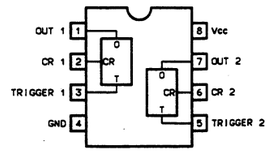


– AN6367NS –



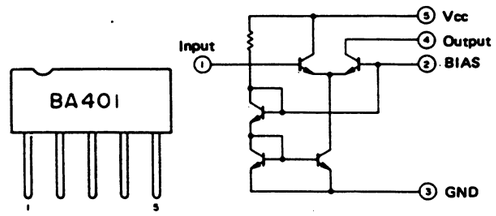
– BA226/BA226F –

Dual Monmultt



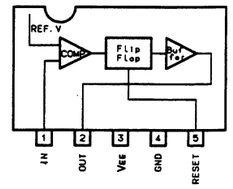
– BA401 –

FM-IF Differential Amplifier



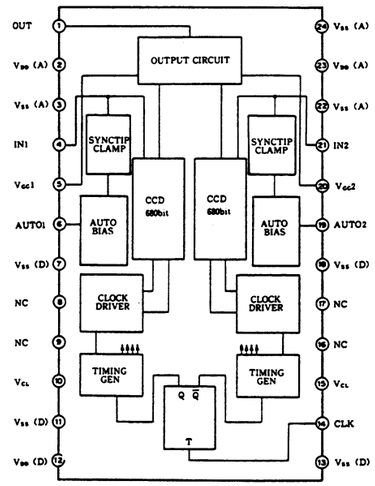
– BA634F –

T Flip-Flop With Reset



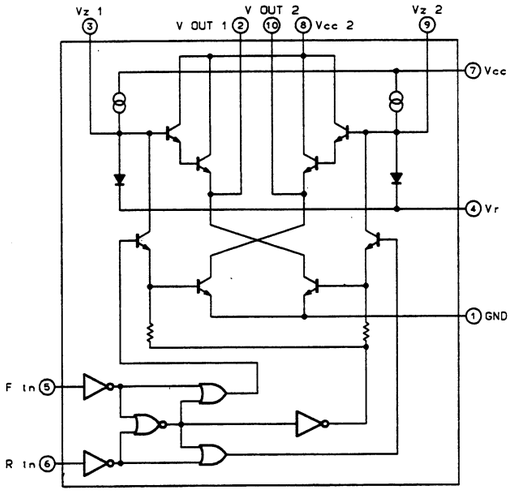
– CXL1004P –

CCD Signal Processor

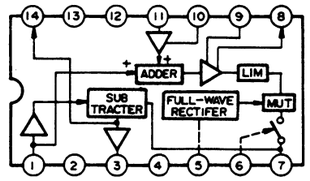


–BA6109 –

Reverstble Motor Driver

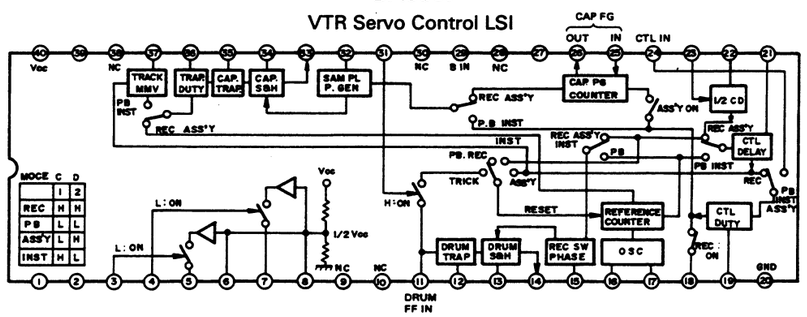


– BA7233 –



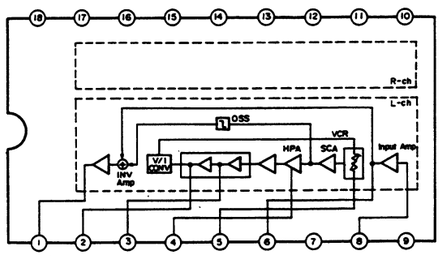
– BA833F –

VTR Servo Control LSI



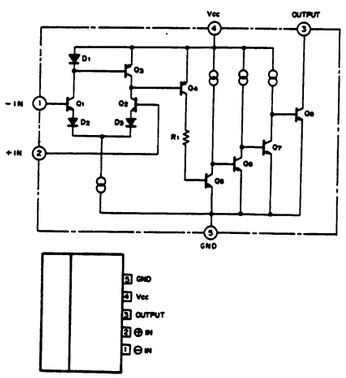
– HA12047MS –

Dolby-B Type Noise Reduction System

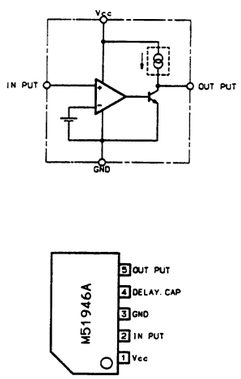


– M51204TL –

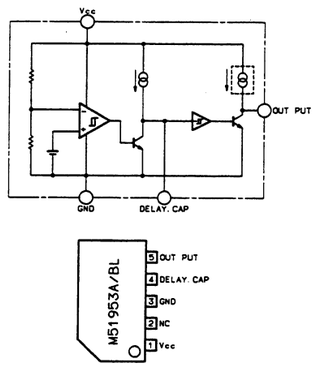
Comparator



– M51946A –

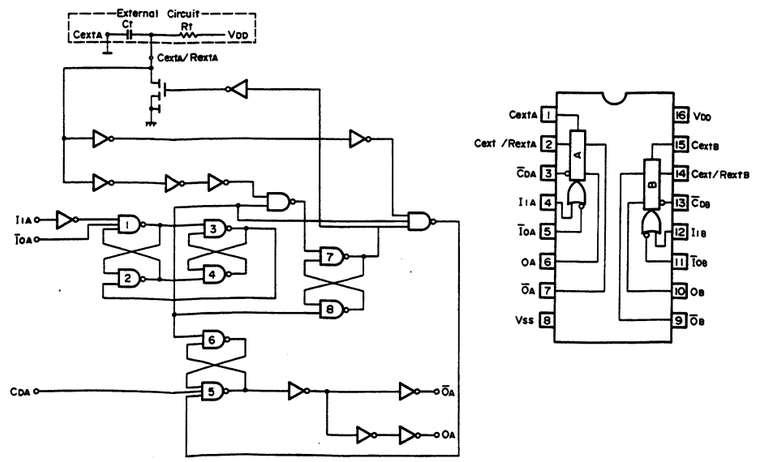


– M51953A –



– MN4528B/MN4528BS –

Double Bananced Mixer



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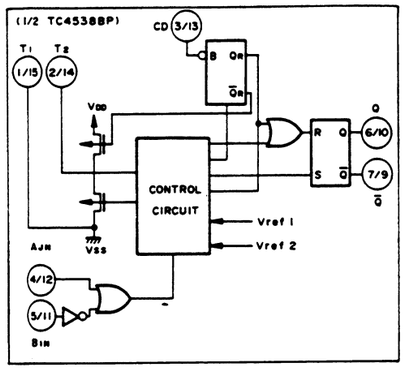
– MN4538BS –

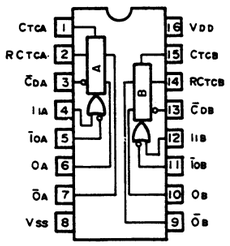
Dual Precision Retriggerable/
Resettable Monostable Multivibrator



INPUT			OUTPUT		NOTE
AIN	BIN	CD	Q	Q̄	
∫	H	H	⎍	⎎	OUTPUT ENABLE
∫	L	H	L	H	INHIBIT
H	∫	H	L	H	INHIBIT
L	∫	H	⎍	⎎	OUTPUT ENABLE
×	×	L	L	H	INHIBIT

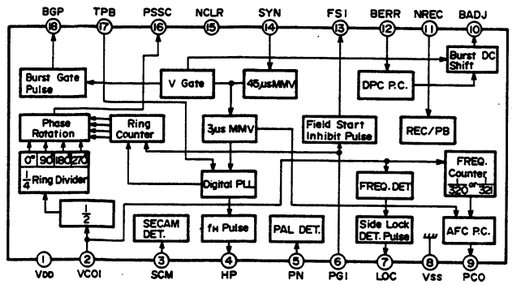
× Don't Care

Dual Precision Monostable Multivibrater

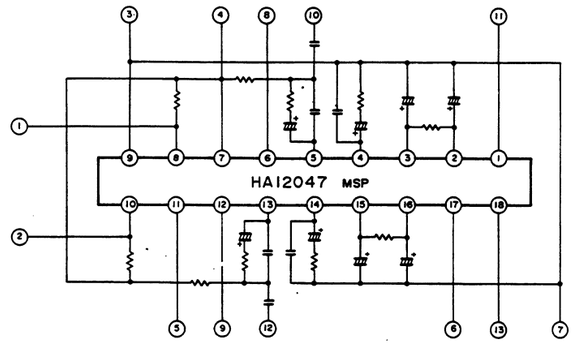


– MN6163AS –

CMOS LSI's for Color Signal Processing

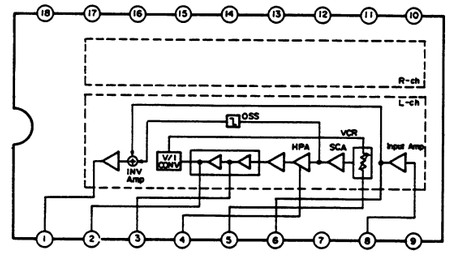


– NR0860 –



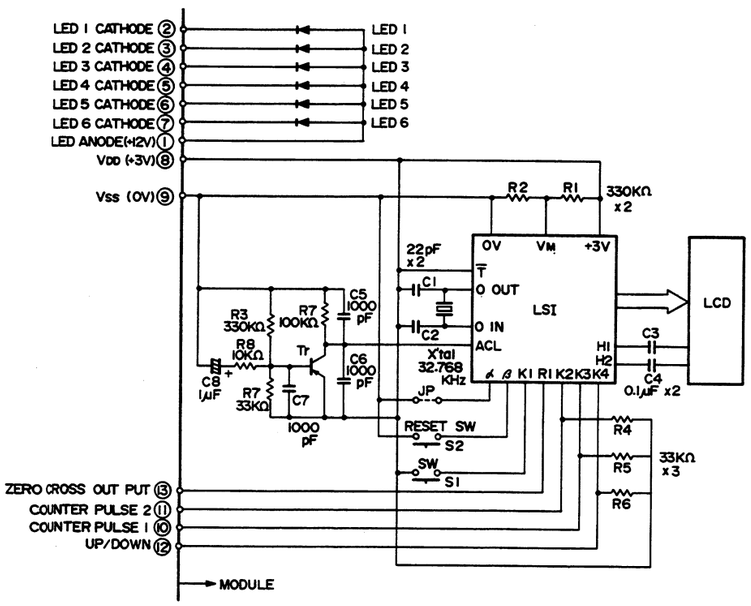
– HA12047MS –

Dolby-B Type Noise Reduction System



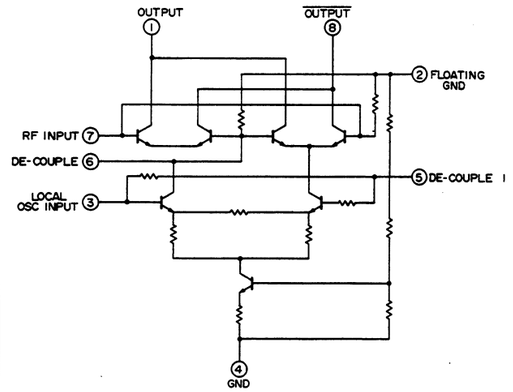
– PGZ00501A-01 –

Counter Assembly (2 8)



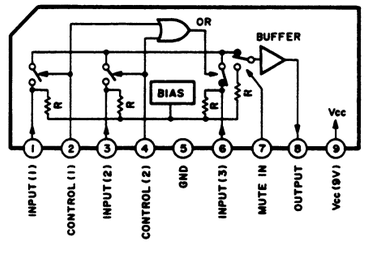
– SN76515P –

Dual Monostable Multivibrator



– TA7348P –

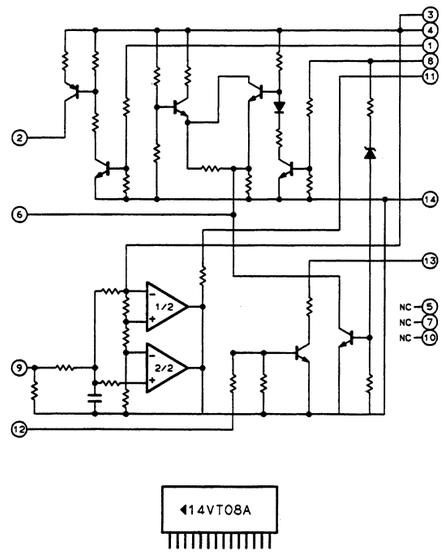
3-Input Switch



Truth Table

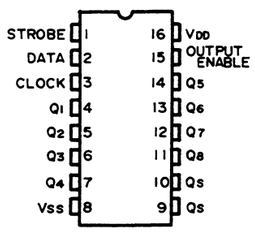
CONTROL (1) 2 Pin	CONTROL (2) 4 Pin	MUTE INPUT 7 Pin	OUTPUT 8 Pin
H	L	L	INPUT(1)
L	H	L	INPUT(2)
L	L	L	INPUT(3)

– 14VT08A –



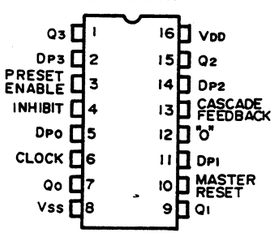
– TC4094BF –

8-Stage Shift-And Store
Busregister



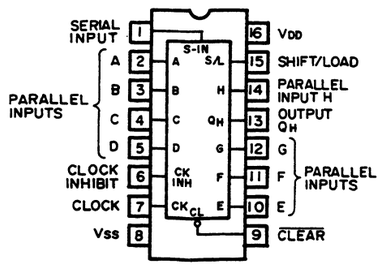
– TC4526BF –

Programmable Divide-by-N
4-Bit Counter



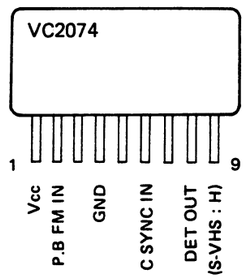
– TC40H166F –

8-Bit Shift Register



– VC2074 –

PB S-VHS mode Detector



SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety.
Replace only with specified part numbers.

Page

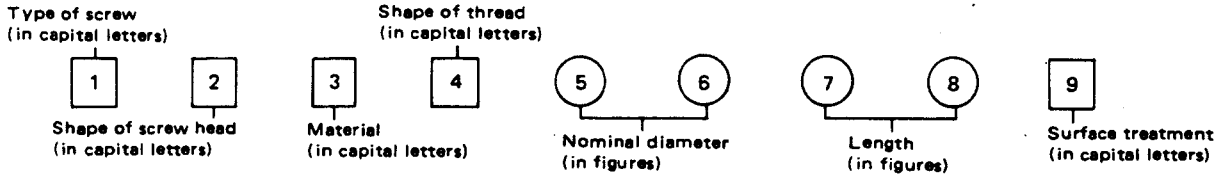
5.1 STANDARD PART NUMBER CODING
- 5.1.1 Screw coding . . . . . 5 - 2
- 5.1.2 Fuse coding . . . . . 5 - 3

5.2 EXPLODED VIEWS AND PARTS LIST
- 5.2.1 Packing assembly . . . . . 5 - 4
- 5.2.2 Cabinet assembly . . . . . 5 - 6
- 5.2.3 Frame assembly . . . . . 5 - 8
- 5.2.4 Main-deck (1) assembly 5-10
- 5.2.5 Main-deck (2) assembly 5-12
- 5.2.6 Battery holder assembly 5-14

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding

Standard screw part numbers are as follows.



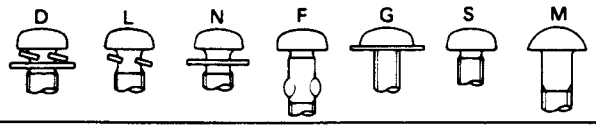
Type of screw (first digit)

- S Normal screws
- D Assembled machine screws (with plain and spring washers)
- L " (with spring washer)
- N " (with plain washer)
- F Feather screws
- G Washer head tapping screws
- M Wood screws

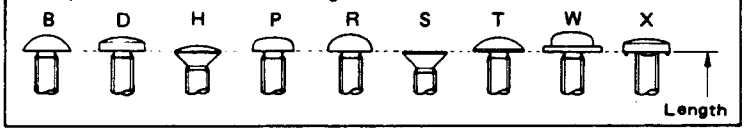
Shape of screw head (second digit)

- B Brazier head
- D Binding head
- H Oval countersunk head
- P Pan head
- R Round head
- S Flat head
- T Truss head
- W Washer head (machine screws)
- X Toothed head

– Type of screw (first digit) –



– Shape of screw head (second digit) –



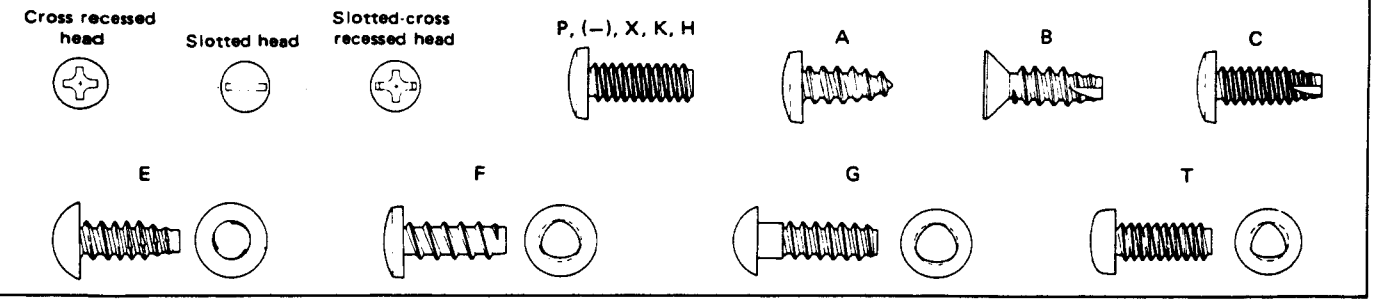
Material (third digit)

- S Steel
- E Stainless steel
- C Cast iron
- U Copper
- B Brass
- P Phosphor bronze
- N Nickel silver
- Y Cast brass
- A Aluminum
- Z Zinc alloy
- K Polycarbonate

Shape of thread (fourth digit)

- P Cross recessed head screws
- (–) Slotted head machine screws
- X Slotted-cross recessed head machine screws
- K Cross recessed head machine screws for precision equipment (type 1)
- H " (type 3)
- A Cross recessed head tapping screws (type 1)
- B " (type 2)
- C " (type 3)
- E Cross recessed head special tapping screws (brand : evertight)
- F " (brand : P-tight)
- T " (brand : taptight)
- G "

– Shape of thread (fourth digit) –



Nominal diameter (fifth and sixth digits)

The fifth and sixth digits are numbers indicating a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

Length (seventh and eighth digits)

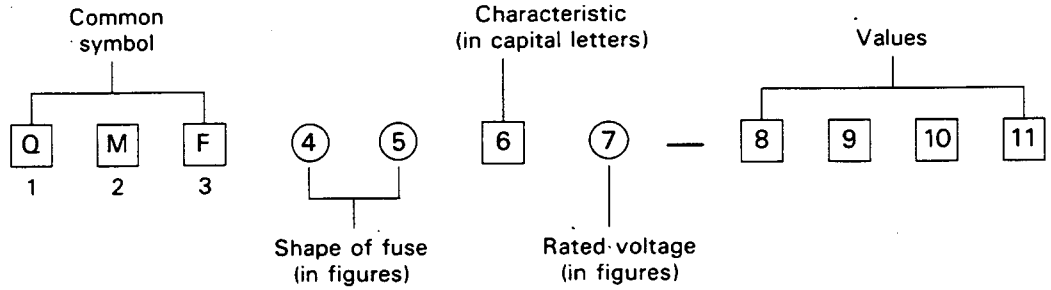
The seventh and eighth digits are numbers indicating length in milimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

- Z Dichromate treatment after galvanizing (MFZn II-C)
- N Nickel plating (MFNi II, MFNi I)
- R Chromium plating (MBCr II, MBCr I)
- G Silver plating (SP4)
- B Black coating after plating
- F Blackening of iron (FB)
- M Blackening after galvanizing
- K Pickling of brass (PF2)
- P Phosphate treatment
- W Uni-chrome plating
- L Coating with transparent paint
- A Coloring red after galvanizing (MFZn II-C)
- C Coloring blue after galvanizing (MFZn II-C)
- T Coloring green after galvanizing (MFZn II-C)
- V Coloring purple after galvanizing (MFZn II-C)

5.1.2 Fuse coding

Standard fuse part numbers are as follows.



Shape of fuse
(fourth and fifth digits)

51	ϕ5.2 × 20 mm
60	ϕ6.4 × 30 mm
61	ϕ6.35 × 31.8 mm
63	ϕ6.4 × 30 mm with lead wires
66	ϕ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1–1 A : AC250 V 1.25–6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

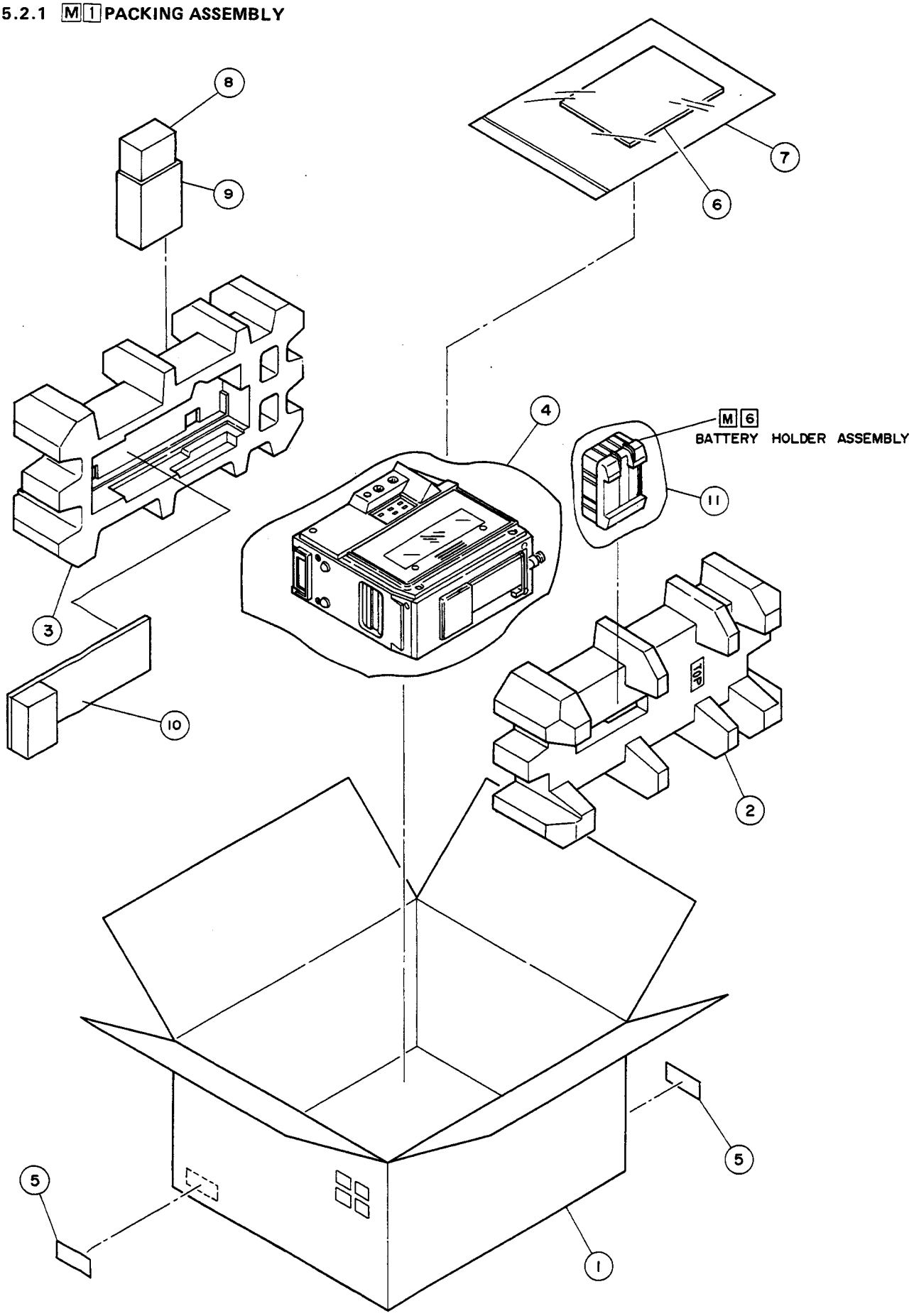
R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

5.2 EXPLODED VIEWS AND PARTS LIST

5.2.1 M1 PACKING ASSEMBLY



— Packing assembly parts list —

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

1. PACKING ASSY <M1>

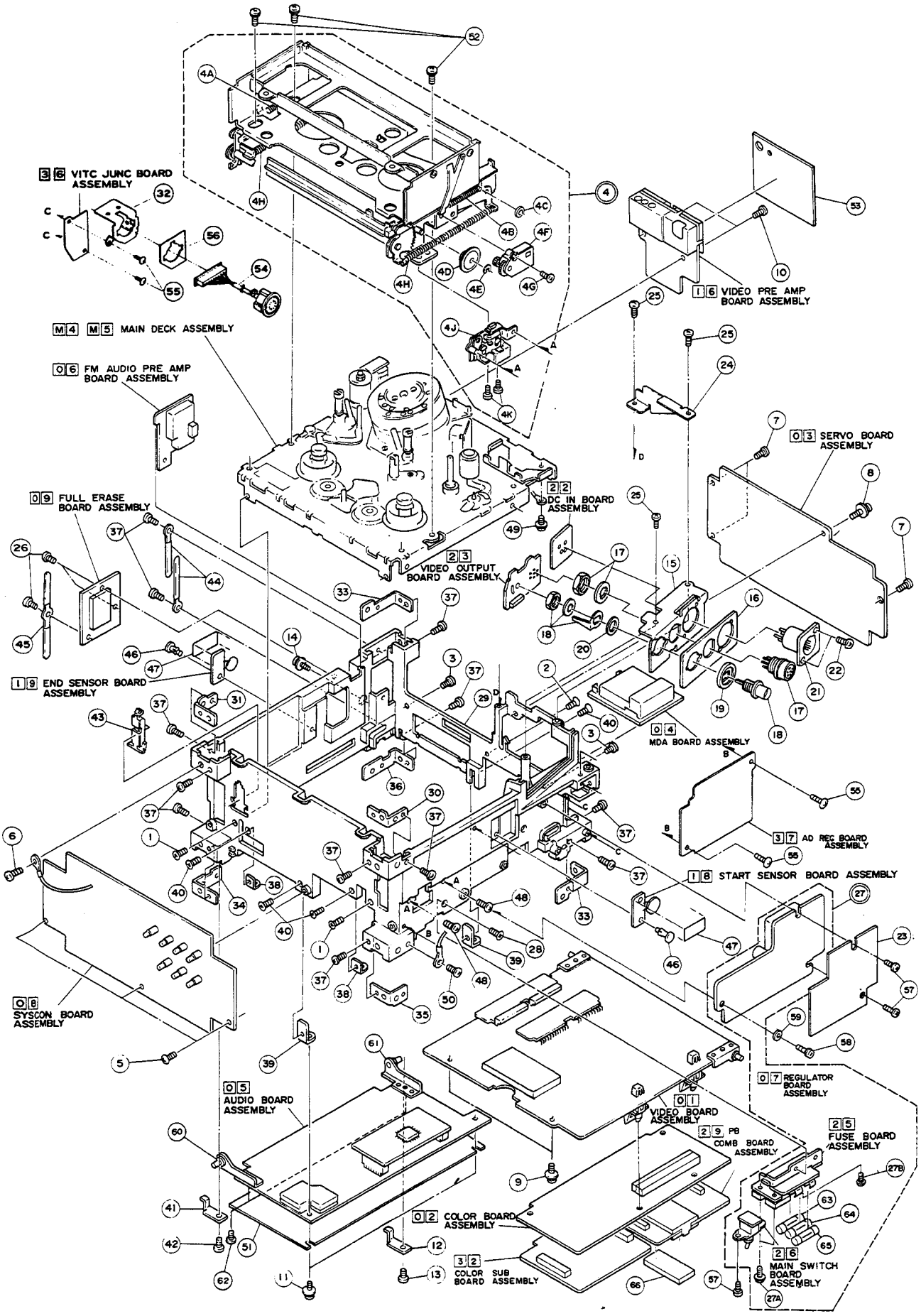
1	PGD20177-07-09	PACKING CASE
2	PRD20217	CUSHION(L)
3	PRD20218	CUSHION(R)
4	PUM30021-26	POLY BAG
5	PUP40619	SERIAL NO. STICKER, X2
6	PGD30002-160	INSTRUCTIONS
7	QPGB024-03404	POLY BAG
8	PGZ00830-01-01	BATTERY
9	PGD41133	SHEET
10	PRD20190-01-02	CUSHION PLATE
11	QPGA017-02505	POLY BAG

When shipped from factory the switches and VR's are set as shown below tables.

REAR COVER		FRONT COVER	
SWITCH		AUDIO INPUT SWITCH	
Hi-Fi REC	ON	AUD-1(L) SELECT	LINE
AUDIO LIMITER	ON	AUD-2(R) SELECT	LINE
DOLBY NR	ON	AUD-1(L) LEVEL	-60dB
AUDIO OUT	HiFi	AUD-2(R) LEVEL	-60dB
AUDIO MONITOR	MIX		
METER SELECT	AUD-2(R)	AUDIO OUT PUT LEVEL	-6dB
REC MODE	S-VHS		
VIDEO OUT	PROCESS-1		
VR			
AUD REC LEVEL	CENTER		
MONITOR LEVEL	CENTER		
TRACKING	CENTER		

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	5	PGD20182A-03	SIDE COVER ASSY (LEFT)
	5A	PGD30404-01-01	TERMINAL BOX
	5B	PGD40772	BOX COVER
	5C	SSSF2606M	SCREW, X6
	5D	PGD40773	PLATE
	5E	SSSP2606M	SCREW, X2
⚠	6	PGD30030-02	SCREW, X3
⚠	7	SDSP3014M	SCREW
	8	PGD20169A	SIDE COVER ASSY (RIGHT)
	8A	SC30988-003	CAMERA GUIDE
	8B	SDSP3006M	SCREW, X2
	9	ML-G00451B	50PIN CONNECTOR WIRE
	10	LPSP2006Z	SCREW, X2
⚠	11	PGD30030-02	SCREW, X2
⚠	12	SDSP3014M	SCREW, X2
	13	PGD20278B-01	FRONT COVER ASSY
⚠	14	PGD30030	SCREW, X4
	15	PGZ00927	XLR CONNECTOR, X2
	16	SPSP2606N	SCREW, X4
	17	PRD20133G-04	CASSETTE COVER ASSY
⚠	17A	PGD10119-07-09	CASSETTE COVER
	17B	PRD42279-02	CASSETTE PLATE
	17C	SBSF2006Z	SCREW, X2
	17D	PRD30469	DUST GUARD
⚠	18	PGD30030	SCREW, X2
	19	PGD10137B	REAR COVER ASSY
	19A	PGD40765-01-02	WINDOW
	19B	PGD40727-02	CUSHION, X2
	19C	PUM30025-2	MARK
	19D	PGD40745-03	SHEET (B)
	19E	PGD30402	PAD
	19F	PGD40746-02	SPRING PLATE
	19G	LPSP2604Z	SCREW, X2
	19H	PGD40747	FUNCTION BUTTON(OPERATE)
	19J	SDSP2606Z	SCREW, X2
	19K	PGD40748	COUNTER BUTTON
	19L	PU49485-3	WIRE CLAMP
	19M	PGD20181	COVER
	19N	PGD40726-02	SHAFT
⚠	20	PGD30030	SCREW, X4
	21	PGD40750-02	VR KNOB, X6
	22	PGZ00283-04	METER(AUD-1<L>)
	23	PGZ00283-05	METER(AUD-2<R>/TRACKING)
	24	PGD40751	METER PLATE
	25	PU52465-02	CUSHION (A), X2
	26	SDSP2606Z	SCREW, X3
	27	SDSP2606Z	SCREW, X3
	28	PGZ00501B	COUNTER ASSY
	29	SDSP2606Z	SCREW, X4
	30	SDSP2606Z	SCREW, X4
	31	PGD40810	SWITCH PROTECTOR
	32	SDSP2604M	SCREW
⚠	33	TJL-000420	STICKER
⚠	34	PGD40895-02	LABEL
⚠	35	PU49729	LABEL
	36	PGD40887	LABEL
⚠	37	PRD30071-03	SERIAL NO. PLATE
	38	PGD41198	PLATE
	39	SDSP2604M	SCREW, X2
	40	PRD42699	SHADE
	41	PGJ05027	BATTERY CONNECTOR
	42	PRD42601	SLIDE KNOB, X5
	43	SDSP2606Z	SCREW, X4
	44	SPSP2606N	SCREW, X4
	45	PGZ01280	DUST CAP

5.2.3 M 3 Frame assembly

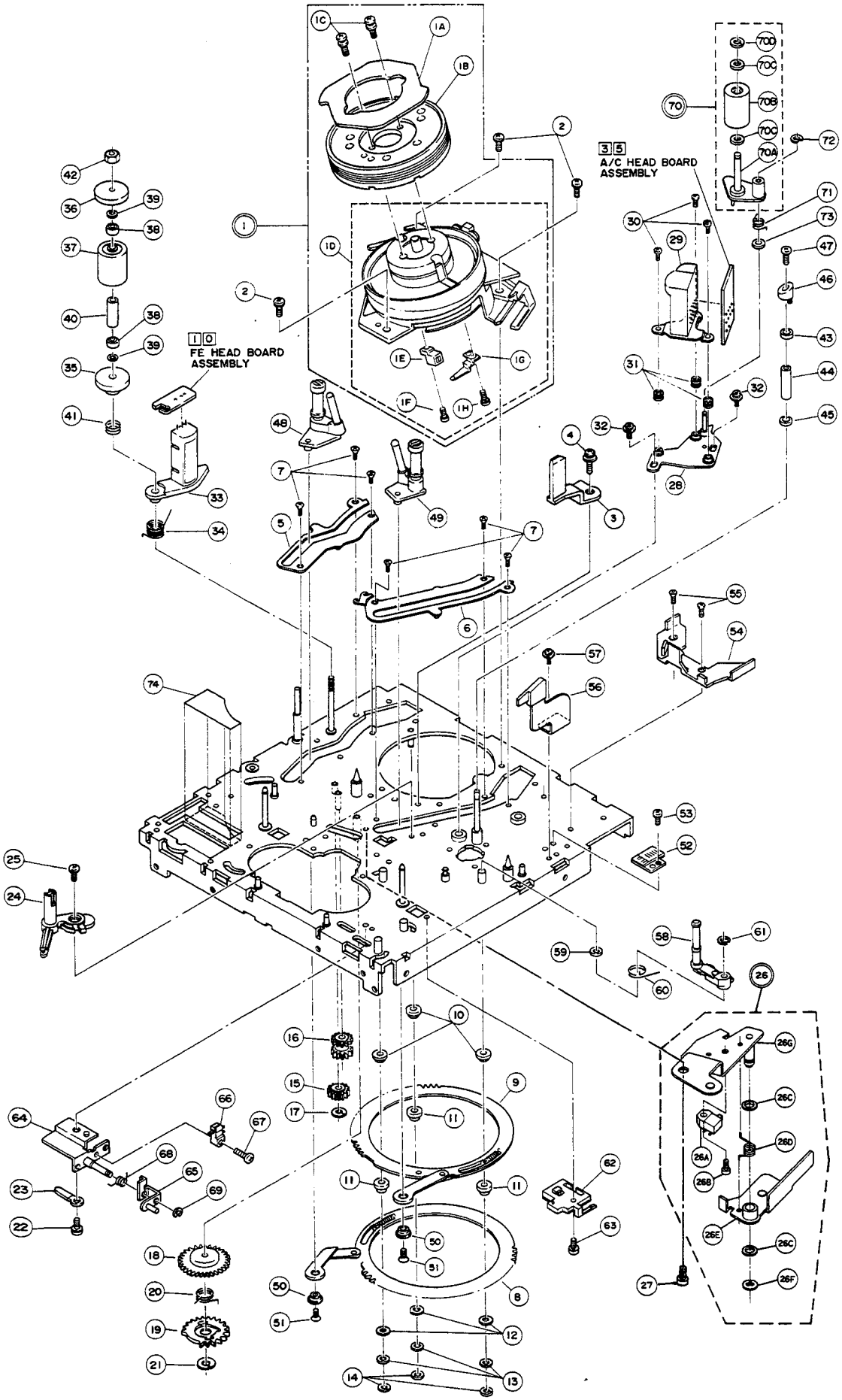


– Frame assembly parts list –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			3. FRAME ASSY <M3>
	1	SSSP3012Z	SCREW, X2
	2	SSSP3006Z	SCREW
	3	LPSP3005Z	SCREW, X2
	4	PGS20168C	CASSETTE HOUSING ASSY
	4A	PQM30001-166	TORSION SPRING(L)
	4B	PQM30001-167	TORSION SPRING(R)
	4C	PQM30017-1	SLIT WASHER
	4D	PQ41036	DUMP GEAR
	4E	REE-1500	E WASHER
	4F	PU56781	DAMPER
	4G	LPSP2006Z	SCREW
	4H	PQM30001-177	TENSION SPRING, X2
	4J	PGD30409A-02	DETECT SWITCH ASSY
	4K	LPSP2606Z	SCREW, X2
	5	SBSF2606Z	SCREW, X3
	6	SPST2606Z	SCREW
	7	SBSF2606Z	SCREW, X3
	8	SPSP2610Z	SCREW
	9	DPSP2605Z	SCREW, X2
	10	SSSP2605Z	SCREW, X2
	11	DPSP2605Z	SCREW, X2
	12	PGD40725	STOPPER
	13	SBSF2606Z	SCREW
	14	DPSP2605Z	SCREW
	15	PGD40767	CONNECTOR BRACKET
	16	PGD40774-02	SHEET(C)
	17	PGZ00593	7PIN CONNECTOR, Y/C 443 OUT
	18	PU51213	BNC CONNECTOR, VIDEO OUT
	19	PU48611	RING
	20	Q03093-439	WASHER
⚠	21	PGZ00594	4PIN CONNECTOR, DC IN
	22	SPSP2604R	SCREW, X2
	23	PGD41232	INSULATOR
	24	PRD30451	BOARD BRACKET
	25	SBSF2608Z	SCREW, X3
	26	SBSF2606Z	SCREW, X3
	27	PGD40924A	POWER UNIT ASSY
	27A	DPSP2610Z	SCREW, X2
	27B	SDSP2606Z	SCREW
	28	SSSP2605Z	SCREW
	29	PGD10113-01-06	FRAME
	30	PGD40716	CORNER BRACKET(1)
	31	PGD40717	CORNER BRACKET(2)
	32	PGD41179	CONNER BRACKET
	33	PGD40719	CORNER BRACKET(4), X2
	34	PGD40720	CORNER BRACKET(5)
	35	PGD40721	CORNER BRACKET(6)
	36	PGD40722	CORNER BRACKET(7)
	37	SPST2606Z	SCREW, X12
	38	PGD40723-01-01	BOARD BRACKET(1), X2
	39	PGD40724-01-01	BOARD BRACKET(2), X2
	40	SSSP2605Z	SCREW, X4

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	41	PGD40725	STOPPER
	42	SBSF2606Z	SCREW
	43	PGS40035A	REC SAFETY SWITCH ASSY
	44	PU49485-2	WIRE CLAMP, X2
	45	PU49486	WIRE CLAMP
	46	PGZ00805	PLASTIC RIVET, X2
	47	PQ41253	SHEET, X2
	48	SPSP2606Z	SCREW, X2
	49	DPSP3005Z	SCREW
	50	SPST2606Z	SCREW
	51	PGD40889	SHEET
	52	LPSP3006Z	ASSY SCREW, X3
	53	PGD40949	SHEET
	54	ML-G00710A-02	10PIN ASSY WIRE
	55	SBSF2606Z	SCREW, X4
	56	PGD41180	SHEET
	57	SBSF2606Z	SCREW, X3
	58	SDSP2610Z	SCREW
	59	WBS2600N	WASHER
	60	PGD40782A	BRACKET ASSY (F)
	61	PGD40784A	BRACKET ASSY (R)
	62	SPSP2606Z	SCREW, X2
	63	QMF51E2-4R0	FUSE, F1
	64	QMF51E2-4R0	FUSE, F2
	65	QMF51E2-4R0	FUSE, F3
	66	PGD40935	SPACER

5.2.4 M4 Main-deck (1) assembly

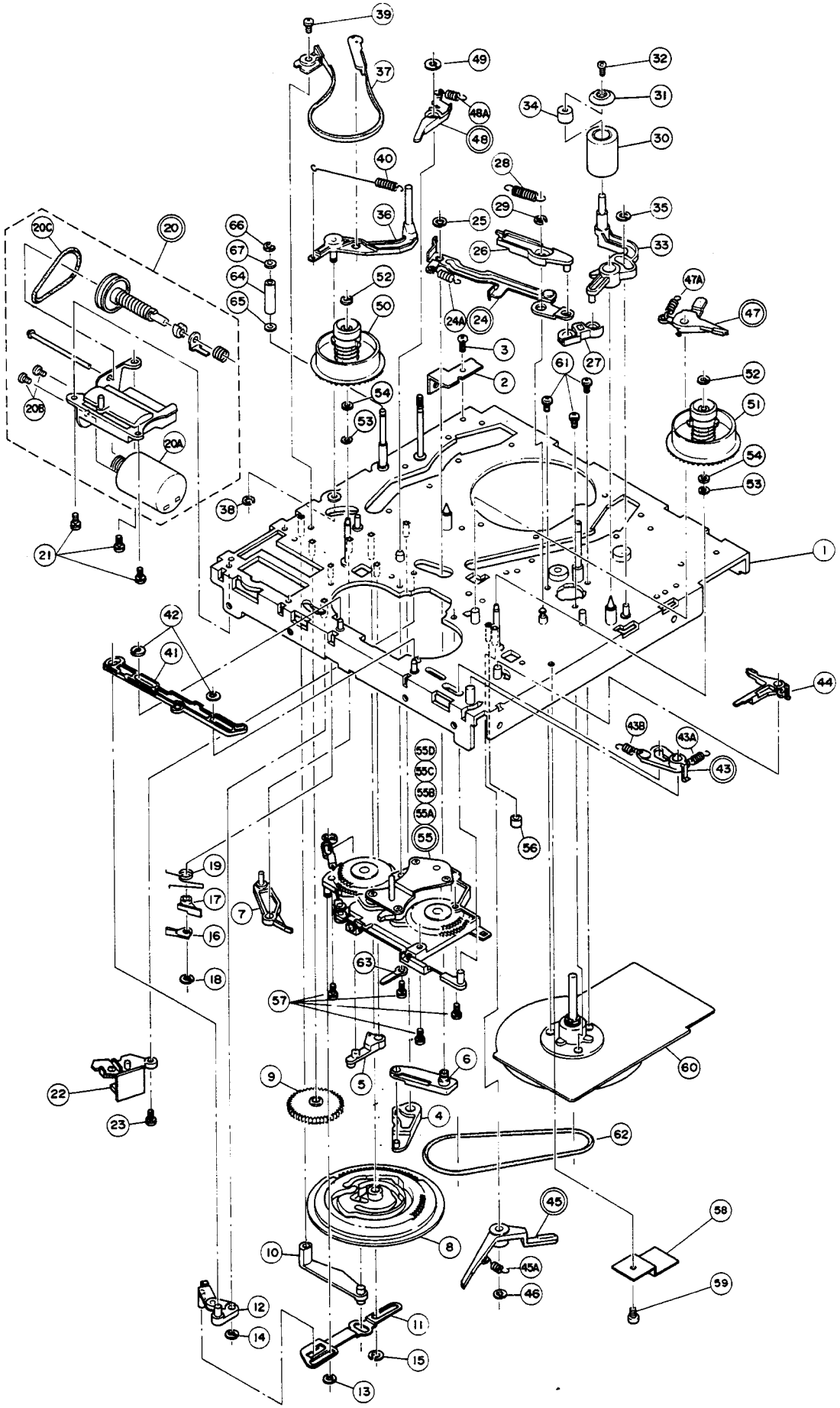


— Main-deck (1) assembly parts list —

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			4. MAIN DECK(1) ASSY <M4>
	1	PDV2158D	DRUM ASSY
	1A	PDM3247	UPPER DRUM BOARD
	1B	PDM2140B	UPPER DRUM ASSY
	1C	PDM4165A	DRUM SCREW ASSEMBLY, X2
	1D	PDM2078D	LOWER DRUM MOTOR ASSY
	1E	PQ40352K	PICKUP HEAD ASSY
	1F	SPSH1735Z	MINI SCREW
	1G	PU56798-3	BRUSH ASSY
	1H	LPSP2003Z	SCREW
	2	LPSP2608Z	SCREW, X3
	3	PRD30287-01-03	TAPE GUIDE
	4	SDSP2606Z	SCREW
	5	PQ30264	GUIDE RAIL(S)
	6	PQ30265	GUIDE RAIL(T)
	7	PQ41269-2	SPECIAL SCREW, X6
	8	PQ40812A-1	LOADING RING ASSY
	9	PQ40816A-1	LOADING RING ASSY
	10	PQ40819-1-2	GUIDE ROLLER 1, X3
	11	PQ40820-1-2	GUIDE ROLLER 2, X3
	12	PQM30005-40	COLLAR, X3
	13	Q03093-827	SPACER, X3
	14	PQM30017-22	SLIT WASHER, X3
	15	PQ40822	CONNECT GEAR 1
	16	PQ40823	CONNECT GEAR 2
	17	PQM30017-24	SLIT WASHER
	18	PQ30336	LOADING GEAR 1
	19	PQ30337	LOADING GEAR 2
	20	PQ41069	TORSION SPRING
	21	PQM30017-18	SLIT WASHER
	22	LPSP2604Z	SCREW
	23	PU49485-3	WIRE CLAMP
	24	PGS30044A	CASSETTE LED ASSY
	25	LPSP2606Z	SCREW
	26	PGS30103A	AL SWITCH ASSY
	26A	PGZ00503	INSERT SWITCH
	26B	SPSP2006Z	SCREW
	26C	Q03093-831	WASHER, X2
	26D	PRD42600	TORSION SPRING
	26E	PRD42599A	AL SWITCH LEVER ASSY
	26F	REE2000	"E"RING
	26G	PRD42595A	AL SWITCH BRACKET ASSY
	27	DPSP2604Z	SCREW
	28	PRD42270A	HEAD BASE ASSY
	29	PGZ00588	A/C HEAD ASSY
	30	PQ43687A	SCREW, X3
	31	PU30080-49	SPRING, X3
	32	DPSP3007Z	SCREW, X2
	33	PQ40865A	FE HEAD ASSY
	34	PQ40871	TORSION SPRING
	35	PRD42175	LOWER FLANGE
	36	PRD42183	UPPER FLANGE
	37	PRD42129	IMPEDANCE ROLLER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	38	PU44093	BALL BEARING, X2
	39	Q03093-825	WASHER, X2
	40	PRD30026-07	COLLAR
	41	PQM30002-124	COMPRESSION SPRING
	42	PQ40353	NYLON NUT
	43	PQ40268-2	GUIDE FLANGE
	44	PU53629-2	TAKE-UP GUIDE POLE
	45	PQ41348-2	GUIDE FLANGE(TAKE-UP)
	46	PQ42999-2-1	GUIDE POLE CAP
	47	SDSP2006Z	SCREW
	48	PRD42474A-01	POLE BASE ASSY(SUPPLY)
	49	PRD42473A-01	POLE BASE ASSY(TAKE-UP)
	50	PQ40872	SPACER, X2
	51	PQ41269	SPECIAL SCREW, X2
	52	PU56637B	DEW SENSOR ASSY
	53	LPSP2604Z	SCREW
	54	PRD42273	BOARD HOLDER
	55	SSSP2605Z	SCREW, X2
	56	PQ40873A	DOOR GUIDE ASSY
	57	LPSP2605Z	SCREW
	58	PQ40993B	TAKE-UP GUIDE ASSY
	59	PQM30018-33	WASHER
	60	PQ40994-1-2	TORSION SPRING
	61	REE2500	E WASHER
	62	PGS40032A	TAKE-UP SENSOR ASSY
	63	LPSP2606Z	SCREW
	64	PRD42107A	SWITCH BRACKET ASSY
	65	PRD42105A	SWITCH LEVER ASSY
	66	PGZ00503	INSERT SWITCH
	67	SPSP2006Z	SCREW
	68	PRD42110	TORSION SPRING
	69	REE1500	E WASHER
	70	PRD42434A-01	IMPEDANCE ROLLER ASSY
	70A	PRD42271A-01	IMPEDANCE ROLLER ARM ASSY
	70B	PRD42324A-01	IMPEDANCE ROLLER ASSY
	70C	Q03093-830	WASHER, X2
	70D	PQM30017-7	SLIT WASHER
	71	PRD42275	TORSION SPRING
	72	REE1500	E WASHER
	73	Q03093-830	WASHER
	74	PRD42816	COVER

5.2.5 M5 Main-deck (2) assembly

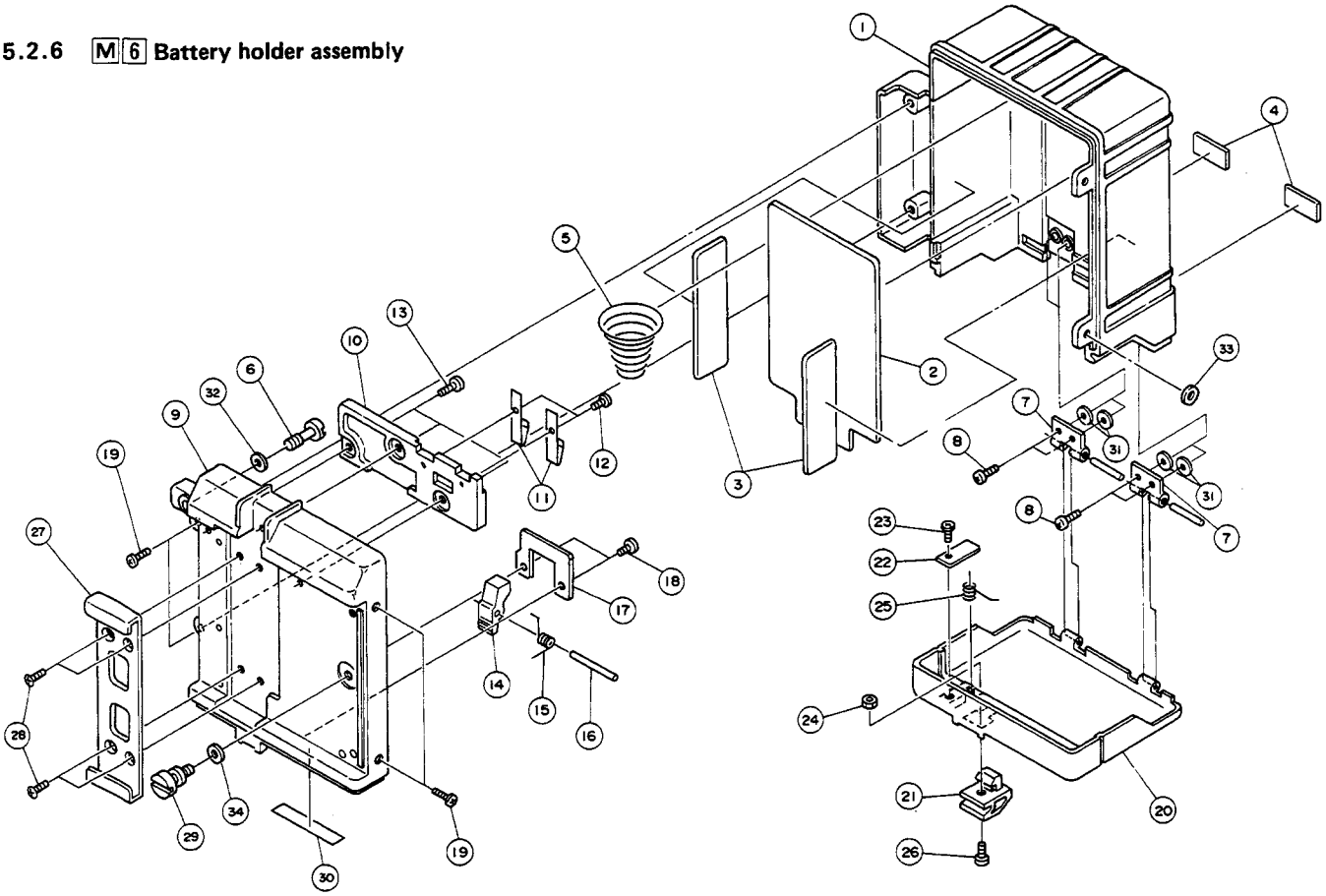


— Main-deck (2) assembly parts list —

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			**** 5. MAIN DECK(2) ASSY <M5> ****
	1	PRD10041A-03	MAIN DECK ASSY
	2	PGD40714-01-02	BOARD BRACKET
	3	LPSP2606Z	SCREW
	4	PQ40826	CAM LEVER 1
	5	PQ40827	CAM LEVER 2
	6	PQ40828A	RELAY ARM ASSY
	7	PRD42569A	CANCEL LEVER ASSY
	8	PRD20207	CONTROL CAM
	9	PQ40833	WORM WHEEL
	10	PQ40834A	CANCEL LEVER 3 ASSY
	11	PQ40836-1-2	SLIDE PLATE
	12	PQ40837B	RELAY LEVER ASSY
	13	PQM30017-22	SLIT WASHER
	14	PQM30017-23	SLIT WASHER
	15	REE2500	E WASHER
	16	PQ41225-1-2	CAM BRAKE 1
	17	PQ41226	CAM BRAKE 2
	18	PQM30017-23	SLIT WASHER
	19	PQ41252-2-2	TORSION SPRING
⚠	20	PGZ00780-01-01	MODE MOTOR BRACKET ASSY
	20A	PU56592V	MODE MOTOR ASSY
	20B	SPSP2004Z	SCREW, X2
	20C	PQM30003-15	BELT (MODE CONTROL)
	21	LPSP2605Z	SCREW, X3
	22	PGS30043A	MODE SENSOR ASSY
	23	LPSP2606Z	SCREW
	24	PQ30267B	PINCH ROLLER PLATE ASSY
	24A	PQM30001-153	TENSION SPRING
	25	PQM30017-23	SLIT WASHER
	26	PQ40843	TOGGLE ARM 1
	27	PQ40844	TOGGLE ARM 2
	28	PQ41124-1-1	TENSION SPRING
	29	REE2500	E WASHER
	30	PQ41125A	PINCH ROLLER ASSY
	31	PU53878	PINCH ROLLER CAP
	32	SPSP2005Z	SCREW
	33	PQ40845A-2	PINCH ROLLER ARM SUB ASSY
	34	PQM30005-39	COLLAR
	35	PQM30017-22	SLIT WASHER
	36	PRD42146A	TENSION POLE ASSY
	37	PQ40851A	TENSION BAND ASSY
	38	REE2000	E WASHER
	39	LPSP2606Z	SCREW
	40	PRD42523	TENSION SPRING
	41	PQ30269-1-5	CONTROL PLATE
	42	PQM30017-22	SLIT WASHER, X2
	43	PRD42422A	EJECT LEVER ASSY
	43A	PQM30001-156	TENSION SPRING
	43B	PQM30001-157	TENSION SPRING
	44	PQ40858B	SEARCH BRAKE ASSY
	45	PQ30270A-1	CAPSTAN BRAKE ASSY
	45A	PQM30001-158	TENSION SPRING
	46	PQM30017-23	SLIT WASHER

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	47	PQ40860A-2	REW BRAKE ASSY
	47A	PQM30001-159-5	TENSION SPRING
	48	PQ40862A-2	FF BRAKE ASSY
	48A	PQM30001-160-5	TENSION SPRING
	49	PQM30017-24	SLIT WASHER
	50	PGZ00894-01-01	SUPPLY REEL DISK
	51	PU57581	TAKE-UP REEL DISK
	52	PQM30017-22	SLIT WASHER, X2
	53	Q03093-827	SPACER, X2
	54	Q03093-834	WASHER, X2
	55	PGZ01257	CLUTCH MECANISM ASSY
	55A	PU56650-1-4	TU CLUTCH
	55B	PGZ01258	SUP CLUTCH
	55C	Q03093-827	SPACER, X3
	55D	PQM30017-2	SLIT WASHER, X3
	56	PQ41868-1-1	SPACER
	57	LPSP2608Z	SCREW, X4
	58	PRD42542A	MOTOR BRACKET. ASSY
	59	LPSP2604Z	ASSY SCREW
⚠	60	PGZ00665	CAPSTAN MOTOR ASSY
	61	LPSP2605Z	SCREW, X3
	62	PQM30003-12	BELT(CAPSTAN)
	63	PU49485-3	WIRE CLAMP
	64	PRD42131	GUIDE ROLLER
	65	Q03093-829	WASHER
	66	REE1500	E WASHER
	67	Q03093-830	WASHER

5.2.6 M 6 Battery holder assembly



– Battery holder assembly parts list –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			********** 6. BATTELY HOLDER ASSY <M6> **********
	1	SC20357-001	BOTTOM CASE
	2	SC43575-001	SHEET(A)
	3	SC43576-001	SHEET(B), X2
	4	SC43577-001	RUBBER, X2
	5	PGD40847-01-01	SPRING
	6	SC43561-001	LOCK SCREW
	7	SC43567-002	HINGE, X2
	8	SSSP2004M	SCREW, X4
	9	SC20356-001	UPPER COVER
	10	SC43565-001	TERMINAL BASE
⚠	11	SC43564-001	TERMINAL, X2
	12	SPSK2025M	MINI SCREW, X2
	13	SSSP2006M	SCREW, X3
	14	SC43563-001	LOCK KNOB
	15	PGD40848	LOCK SPRING
	16	SC43578-001	PIN
	17	SC43572-001	PLATE
	18	SDSP2004M	SCREW, X2
	19	SDSP3006M	SCREW, X4
	20	SC31071-001	COVER
	21	SC43570-001	LOCK KNOB
	22	SC43571-001	PLATE
	23	SPSK2004M	MINI SCREW
	24	NNS2000N	NUT
	25	PGD40849	SPRING
	26	SDSP2006M	SCREW
	27	SC43562-001	SHOE
	28	SSSP3006M	SCREW, X4
	29	PGD40910	GUIDE PIN
	30	SC43695-001	LABEL
	31	WNB2600N	WASHER, X4
	32	Q03093-817	SPACER
	33	WNB3000N	WASHER
	34	Q03093-817	SPACER

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS– All resistance values are in ohms (Ω), unless otherwise indicated.

k	: 1,000 (Kilo)
M	: 1,000,000 (Mega)
Chip R	: Chip Resistor
Chip VR	: Chip Variable Resistor
Comp. R	: Composition Resistor
CR	: Carbon Film Resistor
FR	: Fusible Resistor
MFR	: Metal Film Resistor
MPR	: Metal Plate Resistor
OMR	: Oxide Metal Film Resistor
PMR	: Precision Metal Film Resistor
UFR	: Unflammable Resistor
VR	: Variable Resistor (Potentiometer)
WR	: Wire Wound Resistor

CAPACITORS–All capacitance values are in μF, unless otherwise indicated.

pF	: μμF (Pico farad)
C Cap	: Caramic Capacitor
Chip Cap	: Chip Capacitor
Chip T Cap	: Chip Tantalum Capacitor
E Cap	: Electrolytic Capacitor
FM Cap	: Film Mica Capacitor
LL Cap	: Low Leak Current Electrolytic Capacitor
MM Cap	: Metalized Mylar Capacitor
MP Cap	: Metalized Paper Capacitor
MY Cap	: Mylar Capacitor
NP Cap	: Non-polar Capacitor
PC Cap	: Polycarbonate Capacitor
PP Cap	: Polypropylene Capacitor
PS Cap	: Polystyrol Capacitor
T Cap	: Tantalum Capacitor
TF Cap	: Thin Film Capacitor
TR Cap	: Trimmer Capacitor

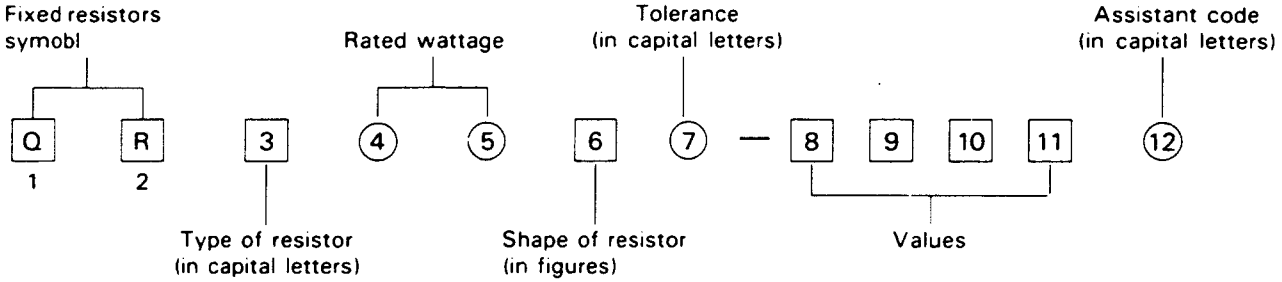
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

6.1 STANDARD PART NUMBER CODING

6.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.



Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	± 1 %
G	± 2 %
J	± 5 %
K	± 10 %
M	± 20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead taping
Z	Lead taping

Values (eighth – tenth or eleventh digits)

examples:

R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

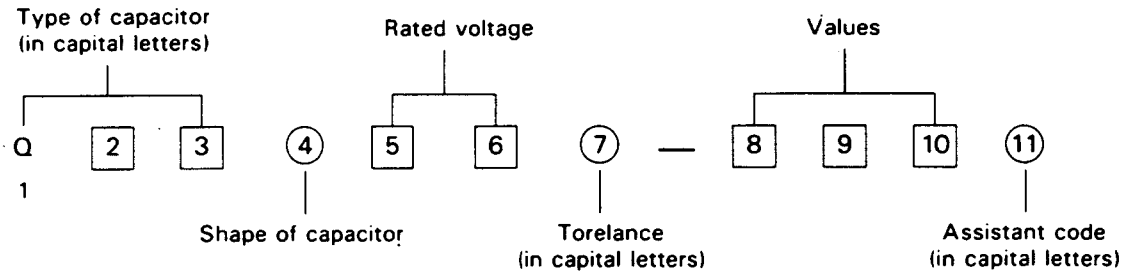
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Shape of resistor \ Type of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				Chip			
9			Lug (C) type							

6.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.



Ceramic capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first – third digits)		Shape of capacitor (fourth digit)				
		Tubular	Normal		Flame retardant	
Symbol	Characteristics		Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Fifth digit \ Sixth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	±5 %	X	$^{+40}_{-20}$ %
K	±10 %	Z	$^{+80}_{-20}$ %

Values (eighth – tenth digits)

Example : Values are in picofarads

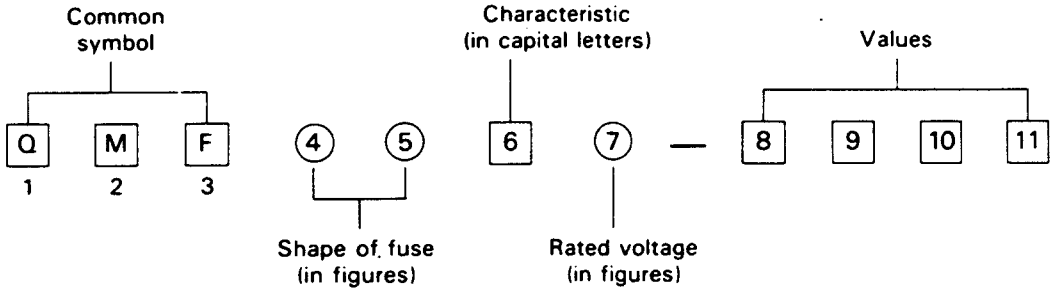
101	10×10^1 pF	100 pF
102	10×10^2 pF	1,000 pF (0.001 μF)
103	10×10^3 pF	10,000 pF (0.01 μF)
104	10×10^4 pF	100,000 pF (0.1 μF)
105	10×10^5 pF	1 μF
5R0		5.0 pF

Assistant code (eleventh digit)

G Small size
Z Lead taping
Y Lead taping

6.1.3 Fuse coding

Standard fuse part numbers are as follows.



Shape of fuse
(fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	0.63 A
1R0	1.0 A
2R5	2.5 A
100	10 A
R315	0.315 A
1R25	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

[0][1]

6.2 ELECTRICAL PARTS LIST BY ASSEMBLY

6.2.1 VIDEO BOARD ASSY [0][1]

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PRK10008A-01	VIDEO BOARD ASSY
	IC1	VC2031MP	IC
	IC2	AN6308S	IC
	IC3	AN6308S	IC
	IC4	M51647FP	IC
	IC5	AN6393	IC
	IC6	AN6308S	IC
	IC7	AN6308S	IC
	IC8	VC2074	IC
	MOD1	PU22282B	Y MODULE BOARD ASSY
	MOD2	PB20008A	Y MODULE BOARD ASSY
	IC10	CXL1004P	IC
	IC12	BA401	IC
	IC13	AN6392	IC
	IC23	TA7348P	IC
	IC24	TC4538BF	IC
	Q1	2SC2778C	TRANSISTOR
	Q2	DTC144EK	TRANSISTOR
	Q4	2SC2778C	TRANSISTOR
	Q5	2SC2778C	TRANSISTOR
	Q6	2SC2778C	TRANSISTOR
	Q7	2SC2778C	TRANSISTOR
	Q8	2SC2778C	TRANSISTOR
	Q9	2SC2778C	TRANSISTOR
	Q10	2SC2778C	TRANSISTOR
	Q11	2SA1022C	TRANSISTOR
	Q13	2SD601A(QR)	TRANSISTOR
	Q14	2SA1022C	TRANSISTOR
	Q15	2SC2778C	TRANSISTOR
	Q16	2SC2778C	TRANSISTOR
	Q18	2SA1022C	TRANSISTOR
	Q19	2SC2778C	TRANSISTOR
	Q21	2SA1022C	TRANSISTOR
	Q22	2SC2778C	TRANSISTOR
	Q23	2SC2778C	TRANSISTOR
	Q24	2SC2778C	TRANSISTOR
	Q25	2SC2778C	TRANSISTOR
	Q26	2SA1022C	TRANSISTOR
	Q27	2SC2778C	TRANSISTOR
	Q29	2SA1022C	TRANSISTOR
	Q30	2SC2778C	TRANSISTOR
	Q32	2SC2778C	TRANSISTOR
	Q33	2SA1022C	TRANSISTOR
	Q34	DTA114EK	TRANSISTOR
	Q35	DTC144EK	TRANSISTOR
	Q36	DTC144EK	TRANSISTOR
	Q37	2SC2778C	TRANSISTOR
	Q38	2SA1022C	TRANSISTOR
	Q39	2SC2778C	TRANSISTOR
	Q40	2SC2778C	TRANSISTOR
	Q41	2SA1022C	TRANSISTOR
	Q42	2SC2778C	TRANSISTOR
	Q43	2SC2778C	TRANSISTOR
	Q44	2SC2778C	TRANSISTOR
	Q45	2SC2778C	TRANSISTOR
	Q46	2SC2778C	TRANSISTOR
	Q47	DTC144EK	TRANSISTOR
	Q48	2SA1022C	TRANSISTOR
	Q49	DTA144EK	TRANSISTOR
	Q50	DTA144EK	TRANSISTOR
	Q54	2SC2778C	TRANSISTOR
	Q55	2SC2778C	TRANSISTOR
	Q56	2SC2778C	TRANSISTOR
	Q57	2SB709A(QR)	TRANSISTOR
	Q58	2SC2778C	TRANSISTOR
	Q59	2SA1022C	TRANSISTOR
	Q60	2SB709A(QR)	TRANSISTOR
	Q61	2SD601A(QR)	TRANSISTOR
	Q62	DTC144EK	TRANSISTOR
	Q63	2SC2778C	TRANSISTOR
	Q65	2SC2778C	TRANSISTOR
	Q66	DTA144WK	TRANSISTOR
	Q68	2SC2778C	TRANSISTOR
	Q69	2SC2778C	TRANSISTOR
	Q70	2SA1022C	TRANSISTOR
	Q71	2SC2778C	TRANSISTOR
	Q74	2SC2778C	TRANSISTOR
	Q75	2SA1022C	TRANSISTOR
	Q76	2SA1022C	TRANSISTOR
	Q77	2SC2778C	TRANSISTOR
	Q78	2SA1022C	TRANSISTOR
	Q80	2SA1022C	TRANSISTOR
	Q82	DTC144EF	TRANSISTOR
	Q83	2SB643R,S	TRANSISTOR
	Q84	2SB643R,S	TRANSISTOR
	Q85	DTC144EF	TRANSISTOR
	Q87	2SB643R,S	TRANSISTOR
	Q89	DTC144EF	TRANSISTOR
	Q90	2SB643R,S	TRANSISTOR
	Q93	2SC2778C	TRANSISTOR
	Q94	2SA1022C	TRANSISTOR
	Q101	2SC2778C	TRANSISTOR
⚠	Q102	2SD601A(QR)	TRANSISTOR
	Q103	2SD601A(QR)	TRANSISTOR
	Q106	2SC2778C	TRANSISTOR
	Q109	2SA1022C	TRANSISTOR
	Q110	2SC2778C	TRANSISTOR
	Q113	DTC144EK	TRANSISTOR
	Q114	DTC144EK	TRANSISTOR
	Q115	2SC2778C	TRANSISTOR
	Q116	2SC2778C	TRANSISTOR
	Q117	2SA1022C	TRANSISTOR
	Q118	2SA1022C	TRANSISTOR
	Q119	2SC2778C	TRANSISTOR
	Q120	2SA1022C	TRANSISTOR
	Q121	2SA1022C	TRANSISTOR
	Q122	DTC144EK	TRANSISTOR
	Q131	2SA1022C	TRANSISTOR
	Q501	DTC144EK	TRANSISTOR
	Q503	2SC2778C	TRANSISTOR
	Q504	2SC2778C	TRANSISTOR
	Q505	2SC2778C	TRANSISTOR
	Q550	2SC2778C	TRANSISTOR
	Q551	DTC144EK	TRANSISTOR
	Q552	DTC144EK	TRANSISTOR
	Q553	DTC144EK	TRANSISTOR
	Q554	2SC2778C	TRANSISTOR
	Q555	2SA1022C	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q556	2SC2778C	TRANSISTOR
	Q557	DTC144EK	TRANSISTOR
	Q560	DTC124EF	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D8	1SS133	DIODE
	D9	1SS99	DIODE
	D10	1SS99	DIODE
	D14	DAN202K	CHIP DIODE ARRAY
	D15	DAN202K	CHIP DIODE ARRAY
	D16	1SS99	DIODE
	D17	1SS99	DIODE
	D18	1SS133	DIODE
	D19	1SS133	DIODE
	D51	1SS133	DIODE
	D52	1SS133	DIODE
	D53	1SS99	DIODE
	D54	1SS99	DIODE
	D55	1SS133	DIODE
	D57	1SS133	DIODE
	D58	1SS133	DIODE
	D60	1SS99	DIODE
	D61	DAN202K	CHIP DIODE ARRAY
	D64	1SS133	DIODE
	R1	QRSA08J-394YN	RESISTOR
	R3	QRSA08J-223YN	RESISTOR
	R4	QRSA08J-222YN	RESISTOR
	R5	QRSA08J-333YN	RESISTOR
	R6	QRSA08J-333YN	RESISTOR
	R7	QRSA08J-102YN	RESISTOR
	R8	QRSA08J-222YN	RESISTOR
	R9	QRSA08J-560YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R11	QRSA08J-681YN	RESISTOR
	R12	QRSA08J-122YN	RESISTOR
	R13	QRSA08J-273YN	RESISTOR
	R14	QRSA08J-223YN	RESISTOR
	R16	QRSA08J-821YN	RESISTOR
	R17	QVZ3531-473	V RESISTOR
	R20	PU59237-473	V RESISTOR
	R21	QRSA08J-223YN	RESISTOR
	R22	QRSA08J-392YN	RESISTOR
	R23	QRSA08J-222YN	RESISTOR
	R24	QRSA08J-561YN	RESISTOR
	R25	QRSA08J-122YN	RESISTOR
	R26	QRSA08J-102YN	RESISTOR
	R27	QRSA08J-102YN	RESISTOR
	R28	QRSA08J-182YN	RESISTOR
	R29	QRSA08J-122YN	RESISTOR
	R30	QRSA08J-182YN	RESISTOR
	R31	QRSA08J-102YN	RESISTOR
	R34	QRSA08J-681YN	RESISTOR
	R35	PU59237-331	V RESISTOR
	R36	QRSA08F-272YN	RESISTOR
	R37	QRSA08F-102YN	RESISTOR
	R38	QRSA08F-272YN	RESISTOR
	R39	QRSA08F-152YN	RESISTOR
	R40	QRSA08F-471YN	RESISTOR
	R41	QRSA08F-102YN	RESISTOR
	R42	QRSA08J-104YN	RESISTOR
	R43	QVZ3531-103	V RESISTOR
	R44	QRSA08F-102YN	RESISTOR
	R45	QRSA08F-471YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R46	QRSA08F-102YN	RESISTOR
	R47	QRSA08F-332YN	RESISTOR
	R48	QRSA08F-152YN	RESISTOR
	R49	QRSA08F-332YN	RESISTOR
	R50	QRSA08F-102YN	RESISTOR
	R51	QRSA08J-331YN	RESISTOR
	R52	QVZ3531-222	V RESISTOR
	R53	QRSA08J-223YN	RESISTOR
	R54	QRSA08J-182YN	RESISTOR
	R56	QRSA08J-122YN	RESISTOR
	R59	QRSA08J-122YN	RESISTOR
	R61	QRSA08J-182YN	RESISTOR
	R63	QRSA08J-122YN	RESISTOR
	R65	QRSA08J-152YN	RESISTOR
	R68	QRSA08J-223YN	RESISTOR
	R69	QRSA08J-223YN	RESISTOR
	R70	QRSA08J-222YN	RESISTOR
	R71	QRSA08J-122YN	RESISTOR
	R72	QRSA08J-561YN	RESISTOR
	R73	QRSA08J-101YN	RESISTOR
	R74	QRSA08J-102YN	RESISTOR
	R75	QRSA08J-103YN	RESISTOR
	R76	QRSA08J-223YN	RESISTOR
	R77	QRSA08J-102YN	RESISTOR
	R78	QRSA08J-102YN	RESISTOR
	R79	PU59237-102	V RESISTOR
	R80	QRSA08J-0R0Y	RESISTOR
	R81	QRSA08J-103YN	RESISTOR
	R82	QRSA08J-223YN	RESISTOR
	R83	QRSA08J-102YN	RESISTOR
	R84	QRSA08J-102YN	RESISTOR
	R85	QRSA08J-103YN	RESISTOR
	R86	QRSA08J-223YN	RESISTOR
	R87	PU59237-102	V RESISTOR
	R88	QRSA08J-0R0Y	RESISTOR
	R89	QRSA08J-223YN	RESISTOR
	R90	QRSA08J-103YN	RESISTOR
	R91	QRSA08J-102YN	RESISTOR
	R92	QRSA08J-102YN	RESISTOR
	R93	QRSA08J-223YN	RESISTOR
	R94	QRSA08J-223YN	RESISTOR
	R95	QRSA08J-102YN	RESISTOR
	R96	QRSA08J-102YN	RESISTOR
	R97	PU59237-152	V RESISTOR
	R98	QRSA08J-331YN	RESISTOR
	R103	QRSA08J-102YN	RESISTOR
	R104	QRSA08J-223YN	RESISTOR
	R105	QRSA08J-223YN	RESISTOR
	R106	QRSA08J-102YN	RESISTOR
	R107	QRSA08J-102YN	RESISTOR
	R108	PU59237-152	V RESISTOR
	R109	QRSA08J-102YN	RESISTOR
	R114	QRSA08J-102YN	RESISTOR
	R115	QRSA08J-102YN	RESISTOR
	R116	QRSA08J-223YN	RESISTOR
	R117	QRSA08J-223YN	RESISTOR
	R118	QRSA08J-103YN	RESISTOR
	R119	QRSA08J-103YN	RESISTOR
	R120	QRSA08J-223YN	RESISTOR
	R121	QRSA08J-681YN	RESISTOR
	R122	QRSA08J-223YN	RESISTOR
	R123	QRSA08J-681YN	RESISTOR
	R124	QRSA08J-223YN	RESISTOR
	R127	QRSA08J-223YN	RESISTOR
	R128	QRSA08J-102YN	RESISTOR
	R129	QVZ3531-471	V RESISTOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R130	QRSA08J-561YN	RESISTOR
	R131	QRSA08J-103YN	RESISTOR
	R132	QRSA08J-183YN	RESISTOR
	R133	QRSA08J-103YN	RESISTOR
	R134	QRSA08J-103YN	RESISTOR
	R135	QRSA08J-223YN	RESISTOR
	R136	QRSA08J-102YN	RESISTOR
	R137	QRSA08J-183YN	RESISTOR
	R138	QRSA08J-182YN	RESISTOR
	R140	QRSA08J-122YN	RESISTOR
	R141	QRSA08J-222YN	RESISTOR
	R142	QRSA08J-681YN	RESISTOR
	R143	QRSA08J-222YN	RESISTOR
	R144	QVZ3531-222	V RESISTOR
	R145	QRSA08J-681YN	RESISTOR
	R146	QRSA08J-273YN	RESISTOR
	R147	QRSA08J-223YN	RESISTOR
	R149	QRSA08J-102YN	RESISTOR
	R150	QRSA08J-222YN	RESISTOR
	R151	QRSA08J-681YN	RESISTOR
	R152	QRSA08J-222YN	RESISTOR
	R153	QVZ3531-222	V RESISTOR
	R154	QRSA08J-471YN	RESISTOR
	R155	QRSA08J-273YN	RESISTOR
	R156	QRSA08J-223YN	RESISTOR
	R157	QRSA08J-222YN	RESISTOR
	R158	QRSA08J-331YN	RESISTOR
	R159	QRSA08J-102YN	RESISTOR
	R160	QRSA08J-272YN	RESISTOR
	R161	QRSA08J-102YN	RESISTOR
	R162	QRSA08J-103YN	RESISTOR
	R163	QRSA08J-273YN	RESISTOR
	R164	QRSA08J-103YN	RESISTOR
	R165	QRSA08J-223YN	RESISTOR
	R166	QRSA08J-331YN	RESISTOR
	R167	QVZ3531-222	V RESISTOR
	R168	QRSA08J-103YN	RESISTOR
	R169	QRSA08J-103YN	RESISTOR
	R170	QRSA08J-562YN	RESISTOR
	R171	QRSA08J-332YN	RESISTOR
	R172	QRSA08J-272YN	RESISTOR
	R176	QRSA08J-223YN	RESISTOR
	R177	QRSA08J-223YN	RESISTOR
	R178	QRSA08J-223YN	RESISTOR
	R179	QRSA08J-223YN	RESISTOR
	R188	QRSA08J-105YN	RESISTOR
	R189	QVZ3531-102	V RESISTOR
	R190	QRSA08J-223YN	RESISTOR
	R191	QRSA08J-333YN	RESISTOR
	R194	QRSA08J-271YN	RESISTOR
	R195	QRSA08J-122YN	RESISTOR
	R196	PU59237-102	V RESISTOR
	R197	QRSA08J-273YN	RESISTOR
	R198	QRSA08J-103YN	RESISTOR
	R199	QRSA08J-102YN	RESISTOR
	R200	QRSA08J-102YN	RESISTOR
	R201	QRSA08J-152YN	RESISTOR
⚠	R202	QRSA08J-272YN	RESISTOR
⚠	R203	QRSA08J-182YN	RESISTOR
	R204	QRSA08J-561YN	RESISTOR
	R205	QRD167J-680	RESISTOR
	R206	QRSA08J-223YN	RESISTOR
	R207	QRSA08J-563YN	RESISTOR
	R208	QRSA08J-222YN	RESISTOR
	R209	QRSA08J-152YN	RESISTOR
	R210	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R211	QRSA08J-101YN	RESISTOR
	R212	QRD167J-0R0	RESISTOR
	R213	QVZ3531-331	V RESISTOR
	R214	QRSA08J-392YN	RESISTOR
	R215	QRSA08J-330YN	RESISTOR
	R216	QRSA08J-103YN	RESISTOR
	R217	QRSA08J-5R6YN	RESISTOR
	R218	QRSA08J-470YN	RESISTOR
	R221	QRSA08J-391YN	RESISTOR
	R222	QRSA08J-152YN	RESISTOR
	R224	QRSA08J-104YN	RESISTOR
	R225	QRSA08J-103YN	RESISTOR
	R226	QRSA08J-471YN	RESISTOR
	R227	QRSA08J-393YN	RESISTOR
	R228	QRSA08J-103YN	RESISTOR
	R238	QRSA08J-102YN	RESISTOR
	R239	PU59237-222	V RESISTOR
	R240	QRSA08J-332YN	RESISTOR
	R241	QRSA08J-152YN	RESISTOR
	R242	QRSA08J-561YN	RESISTOR
	R243	QRSA08J-183YN	RESISTOR
	R244	QRSA08J-473YN	RESISTOR
	R245	QRSA08J-222YN	RESISTOR
	R246	PU59237-222	V RESISTOR
	R247	QRSA08J-152YN	RESISTOR
	R248	QRSA08J-101YN	RESISTOR
	R249	QRSA08J-222YN	RESISTOR
	R255	QRSA08J-183YN	RESISTOR
	R256	QRSA08J-333YN	RESISTOR
	R257	QRSA08J-102YN	RESISTOR
	R258	PU59237-222	V RESISTOR
	R259	QRSA08J-102YN	RESISTOR
	R300	QRSA08J-102YN	RESISTOR
	R301	QRSA08J-122YN	RESISTOR
	R302	QRSA08J-563YN	RESISTOR
	R303	QRSA08J-273YN	RESISTOR
	R304	QRSA08J-821YN	RESISTOR
	R305	QRSA08J-182YN	RESISTOR
	R306	QRSA08J-222YN	RESISTOR
	R307	QRSA08J-101YN	RESISTOR
	R308	QRSA08J-222YN	RESISTOR
	R309	QRSA08J-102YN	RESISTOR
	R310	QRSA08J-222YN	RESISTOR
	R314	QRD167J-750	RESISTOR
	R315	QRSA08J-101YN	RESISTOR
	R316	QRSA08J-392YN	RESISTOR
	R320	QRSA08J-103YN	RESISTOR
	R321	QRSA08J-223YN	RESISTOR
	R322	QRSA08J-102YN	RESISTOR
	R323	QRSA08J-681YN	RESISTOR
	R332	QRSA08J-473YN	RESISTOR
	R333	QRSA08J-393YN	RESISTOR
	R334	QRSA08J-223YN	RESISTOR
⚠	R335	QRSA08J-680YN	RESISTOR
	R336	QRSA08J-330YN	RESISTOR
	R337	QRSA08J-682YN	RESISTOR
⚠	R338	QRSA08J-333YN	RESISTOR
	R339	QRSA08J-561YN	RESISTOR
	R341	QRSA08J-102YN	RESISTOR
	R345	QRSA08J-102YN	RESISTOR
	R346	QRSA08J-102YN	RESISTOR
	R347	QRSA08J-332YN	RESISTOR
	R355	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R356	QRSA08J-102YN	RESISTOR
	R357	QRSA08J-272YN	RESISTOR
	R358	QRSA08J-272YN	RESISTOR
	R359	QRSA08J-102YN	RESISTOR
	R360	QRSA08J-562YN	RESISTOR
	R361	QRSA08J-103YN	RESISTOR
	R362	QRSA08J-223YN	RESISTOR
	R363	QRSA08J-102YN	RESISTOR
	R364	QRSA08J-103YN	RESISTOR
	R365	QRSA08J-223YN	RESISTOR
	R366	QRSA08J-102YN	RESISTOR
	R367	QRSA08J-100YN	RESISTOR
	R368	QRSA08J-102YN	RESISTOR
	R370	QRSA08J-102YN	RESISTOR
	R371	QRSA08J-181YN	RESISTOR
	R372	QRSA08J-102YN	RESISTOR
	R373	QRSA08J-181YN	RESISTOR
	R374	QRSA08J-102YN	RESISTOR
	R376	QRSA08J-392YN	RESISTOR
	R377	QRSA08J-102YN	RESISTOR
	R378	QRSA08J-562YN	RESISTOR
	R379	QRSA08J-821YN	RESISTOR
	R380	QRSA08J-102YN	RESISTOR
	R382	QRSA08J-103YN	RESISTOR
	R383	QRSA08J-181YN	RESISTOR
	R384	QRSA08J-102YN	RESISTOR
	R385	QRSA08J-181YN	RESISTOR
	R386	QRSA08J-102YN	RESISTOR
	R388	QRSA08J-222YN	RESISTOR
⚠	R400	PU52108-100K	POSITIVE THERMISTOR
	R401	ERT-D2FHL-332S	THERMISTOR
	R402	QRD161J-0R0	RESISTOR
	R405	QRSA08J-102YN	RESISTOR
	R406	QRSA08J-822YN	RESISTOR
	R407	QRSA08J-472YN	RESISTOR
	R408	QRSA08J-272YN	RESISTOR
	R409	QRSA08J-103YN	RESISTOR
	R410	QRSA08J-822YN	RESISTOR
	R411	PU59237-332	V RESISTOR
	R412	QRSA08J-102YN	RESISTOR
	R414	QRSA08J-102YN	RESISTOR
	R418	QRSA08J-681YN	RESISTOR
	R419	QRSA08J-102YN	RESISTOR
	R421	QRSA08J-102YN	RESISTOR
	R424	QRSA08J-331YN	RESISTOR
	R426	QRSA08J-333YN	RESISTOR
	R427	QRD167J-335	RESISTOR
	R431	QRSA08J-561YN	RESISTOR
	R432	QRSA08J-271YN	RESISTOR
	R433	QRSA08J-0R0Y	RESISTOR
	R436	QRSA08J-102YN	RESISTOR
	R437	QRSA08J-102YN	RESISTOR
	R438	QRSA08J-331YN	RESISTOR
	R501	QRSA08J-335YN	RESISTOR
	R502	QRSA08J-335YN	RESISTOR
	R503	QRSA08J-102YN	RESISTOR
	R504	QRSA08J-122YN	RESISTOR
	R505	QRSA08J-561YN	RESISTOR
	R506	QRSA08J-221YN	RESISTOR
	R507	QRSA08J-332YN	RESISTOR
	R508	QRSA08J-152YN	RESISTOR
	R509	QRSA08J-101YN	RESISTOR
	R510	QRSA08J-152YN	RESISTOR
	R512	QRSA08F-152YN	RESISTOR
	R514	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R515	QRSA08J-103YN	RESISTOR
	R516	QRSA08J-475YN	RESISTOR
⚠	R517	QRD161J-391	RESISTOR
	R518	QRSA08J-561YN	RESISTOR
	R519	QRD161J-0R0	RESISTOR
	R520	QRSA08J-392YN	RESISTOR
	R521	QRD161J-0R0	RESISTOR
	R522	QRD161J-392	RESISTOR
	R523	ERT-D2FGL101S	THERMISTOR
	R524	QRSA08J-101YN	RESISTOR
	R525	QRD161J-124	RESISTOR
	R527	QRSA08J-182YN	RESISTOR
	R550	QRSA08J-103YN	RESISTOR
	R551	QRSA08J-223YN	RESISTOR
	R552	QRSA08J-102YN	RESISTOR
	R554	PU59237-474	V RESISTOR
	R555	QRSA08J-104YN	RESISTOR
	R556	QRSA08J-0R0Y	RESISTOR
	R558	QRSA08J-823YN	RESISTOR
	R559	QRSA08J-222YN	RESISTOR
	R560	QRSA08J-222YN	RESISTOR
	R561	QRSA08J-472YN	RESISTOR
	R562	PU59237-473	V RESISTOR
	R563	ERT-D2FFL400S	THERMISTOR
	R564	QRSA08J-181YN	RESISTOR
	R565	QRSA08J-332YN	RESISTOR
	R566	QRSA08J-103YN	RESISTOR
	R567	QRSA08J-103YN	RESISTOR
	R568	QRSA08J-473YN	RESISTOR
	R580	QRD161J-0R0	RESISTOR
	R581	QRD161J-103	RESISTOR
	R582	QRD161J-682	RESISTOR
	R583	ERT-D2FHK-153S	THERMISTOR
	R585	QRD161J-680	RESISTOR
	R587	QRD161J-680	RESISTOR
	C3	QCSA1HJ-270	CAPACITOR
	C5	QER41HM-335	E CAPACITOR
	C7	QER41HM-225	E CAPACITOR
	C8	QER41EM-475	E CAPACITOR
	C9	QEK40JM-337	E CAPACITOR
	C10	QCYA1HK-223	CAPACITOR
	C11	QER41CM-106	E CAPACITOR
	C12	QER40JM-476	E CAPACITOR
	C13	QER41CM-106	E CAPACITOR
	C14	QER40GM-476	E CAPACITOR
	C15	QER41HM-225	E CAPACITOR
	C16	QER41EM-335	E CAPACITOR
	C17	QCYA1HK-103	CAPACITOR
	C18	QCSA1HJ-561	CAPACITOR
	C19	QER41HM-105	E CAPACITOR
	C20	QCYA1HK-103	CAPACITOR
	C21	QCSA1HJ-560	CAPACITOR
	C22	QCYA1HK-223	CAPACITOR
	C23	QEK40JM-337	E CAPACITOR
	C26	QER41HM-335	E CAPACITOR
	C27	QCYA1HK-223	CAPACITOR
	C28	QEK40JM-337	E CAPACITOR
	C29	QER41HM-225	E CAPACITOR
	C30	QEE40JM-476	E CAPACITOR
	C31	QCYA1HK-223	CAPACITOR
	C33	QER41CM-476	E CAPACITOR
	C34	QCYA1HK-223	CAPACITOR
	C35	QER40JM-476	E CAPACITOR
	C36	QCTA2CH-271	CAPACITOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C37	QCTA2CH-271	CAPACITOR
	C38	QCTA2CH-820	CAPACITOR
	C39	QCTA2CH-221	CAPACITOR
	C40	QCTA2CH-271	CAPACITOR
	C41	QCTA2CH-820	CAPACITOR
	C42	QCTA2CH-271	CAPACITOR
	C43	QCTA2CH-271	CAPACITOR
	C44	QCTA2CH-221	CAPACITOR
	C45	QEE40JM-476	E CAPACITOR
	C46	QCYA1HK-223	CAPACITOR
	C47	QER41AM-226	E CAPACITOR
	C48	QER40JM-476	E CAPACITOR
	C49	QER41EM-475	E CAPACITOR
	C50	QER41EM-475	E CAPACITOR
	C51	QER40JM-476	E CAPACITOR
	C52	QCYA1HK-223	CAPACITOR
	C56	QER40JM-476	E CAPACITOR
	C57	QCYA1HK-223	CAPACITOR
	C58	QER40JM-476	E CAPACITOR
	C59	QCYA1HK-223	CAPACITOR
	C60	QER40JM-476	E CAPACITOR
	C61	QER41EM-475	E CAPACITOR
	C62	QCYA1HK-223	CAPACITOR
	C63	QER40JM-476	E CAPACITOR
	C64	QCYA1HK-103	CAPACITOR
	C65	QCYA1HK-103	CAPACITOR
	C67	QCSA1HJ-121	CAPACITOR
	C68	QCSA1HJ-121	CAPACITOR
	C69	QCYA1HK-103	CAPACITOR
	C70	QCYA1HK-103	CAPACITOR
	C71	QCYA1HK-223	CAPACITOR
	C72	QER40JM-476	E CAPACITOR
	C73	QCYA1HK-223	CAPACITOR
	C74	QCYA1HK-223	CAPACITOR
	C75	QCYA1HK-103	CAPACITOR
	C76	QCYA1HK-223	CAPACITOR
	C77	QER41CM-476	E CAPACITOR
	C78	QCYA1HK-103	CAPACITOR
	C79	QCSA1HJ-151	CAPACITOR
	C82	QCYA1HK-103	CAPACITOR
	C83	QCSA1HJ-151	CAPACITOR
	C86	QCYA1HK-103	CAPACITOR
	C87	QCYA1HK-103	CAPACITOR
	C88	QCYA1HK-103	CAPACITOR
	C89	QCYA1HK-103	CAPACITOR
	C91	QER40JM-476	E CAPACITOR
	C92	QCYA1HK-223	CAPACITOR
	C93	QCYA1HK-103	CAPACITOR
	C94	QER41EM-475	E CAPACITOR
	C95	QEE41EM-475	TANTAL CAPACITOR
	C96	QER40JM-476	E CAPACITOR
	C97	QCYA1HK-223	CAPACITOR
	C99	QER40JM-476	E CAPACITOR
	C100	QER41CM-476	E CAPACITOR
	C101	QER40JM-476	E CAPACITOR
	C102	QER40JM-476	E CAPACITOR
	C103	QEE40JM-476	E CAPACITOR
	C104	QCYA1HK-223	CAPACITOR
	C105	QCYA1HK-103	CAPACITOR
	C106	QCYA1HK-103	CAPACITOR
	C107	QEE41EM-475	TANTAL CAPACITOR
	C108	QER40JM-476	E CAPACITOR
	C109	QCYA1HK-223	CAPACITOR
	C111	QCSA1HJ-561	CAPACITOR
	C112	QCSA1HJ-151	CAPACITOR
	C113	QCSA1HJ-330	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C114	QCYA1HK-103	CAPACITOR
	C115	QCYA1HK-223	CAPACITOR
	C118	QER40JM-476	E CAPACITOR
	C119	QCYA1HK-223	CAPACITOR
	C120	QCSA1HJ-270	CAPACITOR
	C121	QCYA1HK-103	CAPACITOR
	C122	QCYA1HK-223	CAPACITOR
	C123	QCSA1HJ-680	CAPACITOR
	C124	QCYA1HK-223	CAPACITOR
	C125	QCYA1HK-223	CAPACITOR
	C126	QER41HM-104	E CAPACITOR
	C127	QCSA1HJ-560	CAPACITOR
	C128	QER40JM-476	E CAPACITOR
	C129	QCYA1HK-223	CAPACITOR
	C130	QER40JM-476	E CAPACITOR
	C131	QCYA1HK-223	CAPACITOR
	C132	QER40JM-476	E CAPACITOR
	C133	QCYA1HK-103	CAPACITOR
	C134	QER40JM-476	E CAPACITOR
	C135	QER41EM-475	E CAPACITOR
	C136	QER40JM-476	E CAPACITOR
	C137	QER40JM-476	E CAPACITOR
	C138	QCYA1HK-223	CAPACITOR
	C139	QER40JM-476	E CAPACITOR
	C140	QCYA1HK-103	CAPACITOR
	C141	QER41EM-475	E CAPACITOR
	C142	QER40JM-476	E CAPACITOR
	C143	QER40JM-476	E CAPACITOR
	C144	QCYA1HK-223	CAPACITOR
	C145	QER40JM-476	E CAPACITOR
	C146	QCYA1HK-223	CAPACITOR
	C147	QER41EM-475	E CAPACITOR
	C149	QER40JM-476	E CAPACITOR
	C150	QCYA1HK-223	CAPACITOR
	C156	QEE41VM-105	TANTAL CAPACITOR
	C157	QCYA1HK-223	CAPACITOR
	C158	QER41CM-476	E CAPACITOR
	C159	QER41EM-335	E CAPACITOR
	C160	QER41EM-335	E CAPACITOR
	C161	QER41CM-106	E CAPACITOR
	C162	QER41CM-106	E CAPACITOR
	C164	QER41EM-335	E CAPACITOR
	C165	QCSA1HJ-101	CAPACITOR
	C166	QER41CM-476	E CAPACITOR
	C167	QCYA1HK-223	CAPACITOR
	C168	QER41CM-476	E CAPACITOR
	C170	QER40JM-476	E CAPACITOR
	C171	QCYA1HK-223	CAPACITOR
	C172	QCYA1HK-223	CAPACITOR
	C173	QER41CM-476	E CAPACITOR
	C174	QFN41HJ-103	M CAPACITOR
	C175	QER40JM-476	E CAPACITOR
	C176	PU54990-3	E CAPACITOR
	C177	QER40JM-107	E CAPACITOR
	C178	QCYA1HK-223	CAPACITOR
	C179	QER41CM-476	E CAPACITOR
	C180	QCYA1HK-223	CAPACITOR
	C181	QCYA1HK-223	CAPACITOR
	C183	QCSA1HJ-820	CAPACITOR
	C184	QCYA1HK-223	CAPACITOR
	C185	QCSA1HJ-180	CAPACITOR
	C186	QCSA1HJ-120	CAPACITOR
	C187	QCYA1HK-103	CAPACITOR
	C189	QER41EM-106	E CAPACITOR
	C190	QER41HM-105	E CAPACITOR
	C191	QCYA1HK-223	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C192	QER41CM-476	E CAPACITOR
	C195	QER41CM-476	E CAPACITOR
	C196	QCYA1HK-223	CAPACITOR
	C198	QER41CM-106	E CAPACITOR
	C199	QER41CM-106	E CAPACITOR
	C200	QER41CM-476	E CAPACITOR
	C201	QER41CM-476	E CAPACITOR
	C206	QER41CM-106	E CAPACITOR
	C207	QER41CM-476	E CAPACITOR
	C208	QCYA1HK-223	CAPACITOR
	C209	QER40GM-476	E CAPACITOR
	C210	QER41CM-476	E CAPACITOR
	C211	QCYA1HK-223	CAPACITOR
	C212	QER41CM-106	E CAPACITOR
	C213	PU54990-3	E CAPACITOR
	C214	QCYA1HK-223	CAPACITOR
	C215	QER41CM-476	E CAPACITOR
	C217	QER40JM-476	E CAPACITOR
	C218	QER40JM-476	E CAPACITOR
	C219	QCYA1HK-223	CAPACITOR
	C220	QCYA1HK-103	CAPACITOR
	C221	QCYA1HK-103	CAPACITOR
	C224	QER41CM-106	E CAPACITOR
	C225	QCYA1HK-223	CAPACITOR
	C229	QER40JM-476	E CAPACITOR
	C230	QER41HM-225	E CAPACITOR
	C231	QER41HM-225	E CAPACITOR
	C234	QER41HM-225	E CAPACITOR
	C235	QCSA1HJ-220	CAPACITOR
	C236	QER41HM-105	E CAPACITOR
	C237	QCSA1HJ-101	CAPACITOR
	C238	QER41EM-475	E CAPACITOR
	C241	QCYA1HK-223	CAPACITOR
	C242	QCYA1HK-223	CAPACITOR
	C243	QCSA1HJ-470	CAPACITOR
	C244	QER41CM-106	E CAPACITOR
	C253	QCSA1HJ-220	CAPACITOR
	C254	QCSA1HJ-151	CAPACITOR
	C300	QER41EM-475	E CAPACITOR
	C301	QER40JM-476	E CAPACITOR
	C302	QCYA1HK-103	CAPACITOR
	C303	QCSA1HJ-220	CAPACITOR
	C304	QCSA1HJ-101	CAPACITOR
	C307	QCSA1HJ-220	CAPACITOR
	C309	QCSA1HJ-100	CAPACITOR
	C310	QCSA1HJ-121	CAPACITOR
	C311	QCSA1HJ-680	CAPACITOR
	C314	QER41HM-225	E CAPACITOR
	C315	QCYA1HK-103	CAPACITOR
	C319	QCYA1HK-103	CAPACITOR
	C320	QCSA1HJ-150	CAPACITOR
	C324	QCSA1HJ-221	CAPACITOR
	C501	QCYA1HK-102	CAPACITOR
	C502	QCSA1HJ-560	CAPACITOR
	C503	QCYA1HK-223	CAPACITOR
	C504	QER40JM-476	E CAPACITOR
	C505	QCYA1HK-223	CAPACITOR
	C506	QER41CM-476	E CAPACITOR
	C507	QCTA1CH-151	CAPACITOR
	C508	QER41HM-105	E CAPACITOR
	C509	QER41HM-105	E CAPACITOR
	C510	QCSA1HJ-470	CAPACITOR
	C511	QCSA1HJ-470	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C512	QCSA1HJ-270	CAPACITOR
	C513	QCSA1HJ-680	CAPACITOR
	C514	QCSA1HJ-270	CAPACITOR
	C515	QER40JM-476	E CAPACITOR
	C516	QER40JM-107	E CAPACITOR
	C518	QCSA1HJ-151	CAPACITOR
	C519	QCYA1HK-103	CAPACITOR
	C522	QCSA1HJ-180	CAPACITOR
	C523	QCSA1HJ-180	CAPACITOR
	C524	QCYA1HK-103	CAPACITOR
	C525	QCYA1HK-102	CAPACITOR
	C526	QCSA1HJ-9R0	CAPACITOR
	C527	QCSA1HJ-560	CAPACITOR
	C529	QCYA1HK-103	CAPACITOR
	C550	QCYA1HK-223	CAPACITOR
	C552	QER41HM-474	E CAPACITOR
	C553	QCYA1HK-472	CAPACITOR
	C554	QCYA1HK-223	CAPACITOR
	C555	QEK40JM-476	E CAPACITOR
	C556	QEK41CM-106	E CAPACITOR
	C557	QEK41CM-476	E CAPACITOR
	C558	QCYA1HK-223	CAPACITOR
	C559	QCYA1HK-223	CAPACITOR
	C560	QEK41CM-106	E CAPACITOR
	C561	QCSA1HJ-151	CAPACITOR
	C562	QEK41CM-106	E CAPACITOR
	C570	QCS11HJ-330	CAPACITOR
	C571	QCS11HJ-100	CAPACITOR
	C572	QEE40JM-476	TANTAL CAPACITOR
	C574	QCS11HJ-100	CAPACITOR
	L2	PU53618-471J	COIL
	L4	PGZ00638-101	COIL
	L5	PU53223-121J	COIL
	L6	PU53223-101J	COIL
	L8	PGZ00638-101	COIL
	L9	PU53223-560J	COIL
	L10	PGZ00638-101	COIL
	L11	PGZ00638-101	COIL
	L12	PGZ00638-101	COIL
	L13	PGZ00638-101	COIL
	L16	PGZ00638-101	COIL
	L17	PGZ00638-101	COIL
	L18	PGZ00638-101	COIL
	L19	PU53223-560J	COIL
	L20	PGZ00638-101	COIL
	L21	PGZ00638-101	COIL
	L22	PGZ00638-101	COIL
	L23	PU53223-101J	COIL
	L24	PGZ00638-101	COIL
	L25	PGZ00638-101	COIL
	L27	PU53223-101J	COIL
	L28	PU53223-180J	COIL
	L29	PGZ00638-101	COIL
	L31	PU53223-560J	COIL
	L32	PGZ00638-101	COIL
	L33	PGZ00638-101	COIL
	L34	PGZ00638-101	COIL
	L35	PGZ00638-101	COIL
	L36	PGZ00638-101	COIL
	L37	PGZ00638-101	COIL
	L38	PGZ00638-101	COIL
	L40	PGZ00638-101	COIL
	L41	PGZ00638-101	COIL
	L42	PGZ00638-101	COIL

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L43	PGZ00638-101	COIL
	L44	PGZ00638-101	COIL
	L45	PGZ00638-101	COIL
	L46	PGZ00638-101	COIL
	L47	PU53618-5R6J	COIL
	L48	PU53618-4R7J	COIL
	L49	PGZ00638-101	COIL
	L50	PGZ00638-101	COIL
	L52	PGZ00638-101	COIL
	L53	PGZ00638-101	COIL
	L54	PGZ00638-101	COIL
	L56	PGZ00638-101	COIL
	L59	PU53223-100J	COIL
	L61	PU53618-331J	COIL
	L62	PU53223-820J	COIL
	L67	PU53223-181J	COIL
	L502	PU53223-470J	COIL
	L503	PU53223-180J	COIL
	L504	PU53223-121J	COIL
	L505	PU53223-151J	C.COIL
	L506	PU53223-680J	COIL
	L507	PU53223-151J	C.COIL
	L508	PU53618-471J	COIL
	L509	PGZ00638-101	COIL
	L510	PU48530-3R3K	COIL
	L511	PU48530-3R3K	COIL
	L512	PU48530-680J	COIL
	L551	PGZ00638-101	COIL
	L552	PGZ00638-101	COIL
	L553	PU48530-5R6J	COIL
	LPF1	PGZ00952	LOW PASS FILTER, (LPF1-1)
	LPF2	PGZ00953	LOW PASS FILTER, (LPF1-2)
	LPF3	PGZ00693	LOW PASS FILTER
	LPF4	PGZ00799	LOW PASS FILTER, (LPF2-1)
	LPF5	PGZ00800	LOW PASS FILTER, (LPF2-2)
	DL1	PGZ01058	DELAY LINE
⚠	X1	PGZ00957	CRYSTAL RESONATOR
	K1	PGZ00627Z	CHIP FELITE, X7 (K1-K7)
	CN12,14	PGZ00698-20	BOARD TO BOARD
	CN13,15	PGZ00698-24	BOARD TO BOARD
	HD1	PGZ00606	BOARD HOLDER, X2
	SPC1	PGZ00605	BOARD SPACER, X2
	VA1	PU49624-2	VARISTOR
	CN1	PU58844-109	CAP HOUSING
	CN2	PU58844-111Y	CAP HOUSING
	CN3	PU58844-104	CAP HOUSING
	CN4	PU58844-108R	CAP HOUSING
	CN5	PU58844-106	CAP HOUSING
	CN6	PU58844-9	CAP HOUSING
	CN7	PU58844-105	CAP HOUSING
	CN8	PU58844-112	CAP HOUSING
	CN9	PU58844-112R	CAP HOUSING
	CN10	PU58844-109	CAP HOUSING

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN16	YU40960-16	CONNECTOR
	CN17	YU40960-16	CONNECTOR
		-VIDEO SUB 1 BOARD ASSY-	
	PWBA1	PGE20167A1-01	VIDEO SUB 1 BOARD ASSY
	Q107	2SA1022C	TRANSISTOR
	Q108	2SC2778C	TRANSISTOR
	R348	QRSA08J-102YN	RESISTOR
	R349	QRSA08J-122YN	RESISTOR
	R350	QRSA08J-102YN	RESISTOR
	R351	QRSA08J-101YN	RESISTOR
	R352	QRSA08J-222YN	RESISTOR
	R353	QRSA08J-123YN	RESISTOR
	R354	QRSA08J-223YN	RESISTOR
		-VIDEO SUB 2 BOARD ASSY-	
	PWBA2	PGE20167A2-01	VIDEO SUB 2 BOARD ASSY
	Q126	2SC2778C	TRANSISTOR
	R415	QRSA08J-682YN	RESISTOR
	R416	QRSA08J-101YN	RESISTOR
	R417	PU59237-103	V RESISTOR
	C250	QCSA1HJ-102	CAPACITOR
	C251	QCYA1HK-223	CAPACITOR
	TP1	PU56008	TEST-PIN, X36

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* 6.2.2 COLOR BOARD ASSY 02 *
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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PRK20032A-01	COLOR BOARD ASSY
	IC1	AN6308S	IC
	IC2	AN6308S	IC
	IC3	BA7233	IC
	IC4	AN6308S	IC
⚠	IC5	AN6367S	IC
	IC6	MN6163AS	IC
	IC7	AN6308S	IC
	Q1	DTA144EK	TRANSISTOR
	Q2	2SC2778C	TRANSISTOR
	Q3	2SC2778C	TRANSISTOR
	Q4	2SC2778C	TRANSISTOR
	Q5	2SC2778C	TRANSISTOR
	Q6	2SC2778C	TRANSISTOR
	Q7	2SC2778C	TRANSISTOR
	Q8	2SA1022C	TRANSISTOR
	Q9	2SD601A(QR)	TRANSISTOR
	Q10	2SC2778C	TRANSISTOR
	Q11	2SC2778C	TRANSISTOR
	Q12	2SC2778C	TRANSISTOR
	Q13	2SC2778C	TRANSISTOR
	Q14	DTC144EK	TRANSISTOR
	Q15	2SC2778C	TRANSISTOR
	Q16	2SC2778C	TRANSISTOR
	Q17	2SA1022C	TRANSISTOR
	Q18	2SC2778C	TRANSISTOR
	Q19	2SC2778C	TRANSISTOR
	Q20	2SC2778C	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q21	2SC2778C	TRANSISTOR
	Q23	2SC2778C	TRANSISTOR
	Q24	2SC2778C	TRANSISTOR
	Q25	2SC2778C	TRANSISTOR
	Q26	DTC144EK	TRANSISTOR
	Q27	2SC2778C	TRANSISTOR
	Q28	2SA1022C	TRANSISTOR
	Q29	2SC2778C	TRANSISTOR
	Q30	2SC2778C	TRANSISTOR
	Q31	2SC2778C	TRANSISTOR
	Q32	2SC2778C	TRANSISTOR
	Q33	2SC2778C	TRANSISTOR
	Q34	2SC2778C	TRANSISTOR
	Q35	2SC2778C	TRANSISTOR
	Q36	2SC2778C	TRANSISTOR
	Q37	DTA144EK	TRANSISTOR
	Q38	DTC144EK	TRANSISTOR
	Q39	2SC2778C	TRANSISTOR
	Q40	2SA1022C	TRANSISTOR
	Q41	2SC2778C	TRANSISTOR
	Q42	2SC2778C	TRANSISTOR
	Q43	2SC2778C	TRANSISTOR
	Q44	DTC144EK	TRANSISTOR
	Q45	2SC2778C	TRANSISTOR
	Q46	2SA1022C	TRANSISTOR
	Q47	2SC2778C	TRANSISTOR
	Q48	2SK621	FE TRANSISTOR
	Q49	2SK621	FE TRANSISTOR
	Q50	2SK621	FE TRANSISTOR
	Q51	2SC2778C	TRANSISTOR
	D1	DAN202K	CHIP DIODE ARRAY
	D2	DAN202K	CHIP DIODE ARRAY
	R1	QRSA08J-562YN	RESISTOR
	R2	QRSA08J-183YN	RESISTOR
	R3	QRSA08J-103YN	RESISTOR
	R4	QRSA08J-102YN	RESISTOR
	R5	QRSA08J-102YN	RESISTOR
	R6	QRSA08J-102YN	RESISTOR
	R7	QRSA08J-103YN	RESISTOR
	R8	QRSA08J-183YN	RESISTOR
	R9	QRSA08J-222YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R11	QRSA08J-103YN	RESISTOR
	R12	QRSA08J-222YN	RESISTOR
	R13	QRSA08J-561YN	RESISTOR
	R14	QRSA08J-273YN	RESISTOR
	R15	QRSA08J-183YN	RESISTOR
	R16	QRSA08J-102YN	RESISTOR
	R17	QRSA08J-102YN	RESISTOR
	R18	QRSA08J-222YN	RESISTOR
	R19	QRSA08J-103YN	RESISTOR
	R20	QRSA08J-183YN	RESISTOR
	R21	QRSA08J-222YN	RESISTOR
	R22	QRSA08J-102YN	RESISTOR
	R23	QRSA08J-102YN	RESISTOR
	R24	QRSA08J-152YN	RESISTOR
	R25	QRSA08J-103YN	RESISTOR
	R26	QRSA08J-183YN	RESISTOR
	R27	QRSA08J-561YN	RESISTOR
	R28	QRSA08J-471YN	RESISTOR
	R29	QRSA08J-122YN	RESISTOR
	R30	QRSA08J-183YN	RESISTOR
	R31	QRSA08J-822YN	RESISTOR
	R32	QVZ3531-102	V RESISTOR
	R33	QRSA08J-561YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R34	QRSA08J-560YN	RESISTOR
	R35	QRSA08J-222YN	RESISTOR
	R36	QRSA08J-122YN	RESISTOR
	R37	QRSA08J-271YN	RESISTOR
	R38	QVZ3531-472	V RESISTOR
	R39	QRSA08J-101YN	RESISTOR
	R40	QRSA08J-471YN	RESISTOR
	R41	QRSA08J-122YN	RESISTOR
	R42	QRSA08J-223YN	RESISTOR
	R43	QRSA08J-103YN	RESISTOR
	R44	QVZ3531-222	V RESISTOR
	R45	QRSA08J-102YN	RESISTOR
	R46	QRSA08J-152YN	RESISTOR
	R47	QRSA08J-103YN	RESISTOR
	R48	QRSA08J-473YN	RESISTOR
	R49	QRSA08J-103YN	RESISTOR
	R50	QRSA08J-152YN	RESISTOR
	R51	QVZ3531-332	V RESISTOR
	R52	QVZ3531-102	V RESISTOR
	R53	QRSA08J-102YN	RESISTOR
	R54	QRSA08J-102YN	RESISTOR
	R55	QRSA08J-183YN	RESISTOR
	R56	QRSA08J-103YN	RESISTOR
	R57	QRSA08J-102YN	RESISTOR
	R58	QRSA08J-472YN	RESISTOR
	R59	QRSA08J-151YN	RESISTOR
	R60	QRSA08J-561YN	RESISTOR
	R61	QVZ3531-473	V RESISTOR
	R62	QRSA08J-103YN	RESISTOR
	R63	QRSA08J-104YN	RESISTOR
	R64	QRSA08J-182YN	RESISTOR
	R65	QRSA08J-332YN	RESISTOR
	R66	QRSA08J-822YN	RESISTOR
	R67	QRSA08J-152YN	RESISTOR
	R68	QRSA08J-682YN	RESISTOR
	R69	QRSA08J-682YN	RESISTOR
	R70	QRSA08J-152YN	RESISTOR
	R71	QRSA08J-103YN	RESISTOR
	R72	QRSA08J-103YN	RESISTOR
	R73	QRSA08J-333YN	RESISTOR
	R74	QRSA08J-103YN	RESISTOR
	R75	QRSA08J-103YN	RESISTOR
	R76	QRSA08J-273YN	RESISTOR
	R77	QRSA08J-393YN	RESISTOR
	R78	QRSA08J-682YN	RESISTOR
	R79	QRSA08J-223YN	RESISTOR
	R80	QRSA08J-682YN	RESISTOR
	R81	QRSA08J-102YN	RESISTOR
	R82	QRSA08J-562YN	RESISTOR
	R83	QRSA08J-331YN	RESISTOR
	R84	QRSA08J-562YN	RESISTOR
	R85	QRSA08J-103YN	RESISTOR
	R86	QRSA08J-103YN	RESISTOR
	R87	QRSA08J-682YN	RESISTOR
	R88	QRSA08J-103YN	RESISTOR
	R89	QRSA08J-123YN	RESISTOR
	R90	QRSA08J-102YN	RESISTOR
	R91	QRSA08J-181YN	RESISTOR
	R92	QRSA08J-103YN	RESISTOR
	R93	QRSA08J-333YN	RESISTOR
	R94	QRSA08J-272YN	RESISTOR
	R95	QRSA08J-681YN	RESISTOR
	R96	QRSA08J-331YN	RESISTOR
	R97	QRSA08J-223YN	RESISTOR
	R98	QRSA08J-102YN	RESISTOR
	R99	QRSA08J-223YN	RESISTOR
	R100	QRSA08J-103YN	RESISTOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R101	QRSA08J-102YN	RESISTOR
	R102	QRSA08J-561YN	RESISTOR
	R103	QRSA08J-151YN	RESISTOR
	R104	QRSA08J-333YN	RESISTOR
	R105	QRSA08J-223YN	RESISTOR
	R106	QRSA08J-102YN	RESISTOR
	R107	QRSA08J-102YN	RESISTOR
	R108	QVZ3531-102	V RESISTOR
	R109	QRSA08J-102YN	RESISTOR
	R110	QRSA08J-102YN	RESISTOR
	R111	QRSA08J-102YN	RESISTOR
	R112	QVZ3531-102	V RESISTOR
	R113	QRSA08J-102YN	RESISTOR
	R114	QRSA08J-103YN	RESISTOR
	R115	QRSA08J-682YN	RESISTOR
	R116	QRSA08J-561YN	RESISTOR
	R117	QRSA08J-102YN	RESISTOR
	R118	QRSA08J-562YN	RESISTOR
	R119	QVZ3531-102	V RESISTOR
	R120	QVZ3531-222	V RESISTOR
	R121	QRSA08J-473YN	RESISTOR
	R122	QRSA08J-473YN	RESISTOR
	R123	QRSA08J-103YN	RESISTOR
	R124	QRSA08J-222YN	RESISTOR
	R125	QRSA08J-103YN	RESISTOR
	R126	QRSA08J-223YN	RESISTOR
	R127	QRSA08J-223YN	RESISTOR
	R128	QRSA08J-103YN	RESISTOR
	R129	QRSA08J-103YN	RESISTOR
	R130	QRSA08J-183YN	RESISTOR
	R131	QRSA08J-102YN	RESISTOR
	R132	QRSA08J-561YN	RESISTOR
	R133	QRSA08J-273YN	RESISTOR
	R134	QRSA08J-103YN	RESISTOR
	R135	QRSA08J-102YN	RESISTOR
	R136	QRSA08J-223YN	RESISTOR
	R137	QRSA08J-102YN	RESISTOR
	R138	QRSA08J-560YN	RESISTOR
	R139	QRSA08J-223YN	RESISTOR
	R140	QRSA08J-223YN	RESISTOR
	R141	QRSA08J-102YN	RESISTOR
	R142	QRSA08J-222YN	RESISTOR
	R143	QRSA08J-102YN	RESISTOR
	R144	QRSA08J-272YN	RESISTOR
	R145	QRSA08J-272YN	RESISTOR
	R146	QRSA08J-272YN	RESISTOR
	R147	QRSA08J-222YN	RESISTOR
	R148	QRD161J-151	RESISTOR
	C1	QCYA1HK-223	CAPACITOR
	C2	QCYA1HK-223	CAPACITOR
	C3	QCYA1HK-223	CAPACITOR
	C4	QCYA1HK-103	CAPACITOR
	C5	QCYA1HK-103	CAPACITOR
	C6	QCYA1HK-223	CAPACITOR
	C7	QCYA1HK-223	CAPACITOR
	C8	QER41CM-106	E CAPACITOR
	C9	QCYA1HK-223	CAPACITOR
	C10	QCYA1HK-223	CAPACITOR
	C11	QER40JM-476	E CAPACITOR
	C12	QCYA1HK-223	CAPACITOR
	C13	QCYA1HK-223	CAPACITOR
	C14	QCYA1HK-223	CAPACITOR
	C15	QCYA1HK-223	CAPACITOR
	C16	QCYA1HK-223	CAPACITOR
	C17	QCYA1HK-223	CAPACITOR
	C18	QER40JM-476	E CAPACITOR
	C19	QCYA1HK-223	CAPACITOR
	C20	QCYA1HK-223	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C21	QEE41CM-106	TANTAL CAPACITOR
	C22	QCYA1HK-223	CAPACITOR
	C23	QER40JM-476	E CAPACITOR
	C24	QCYA1HK-223	CAPACITOR
	C25	QER41HM-105	E CAPACITOR
	C26	QER40JM-476	E CAPACITOR
	C27	QCYA1HK-223	CAPACITOR
	C28	QCYA1HK-103	CAPACITOR
	C29	QCYA1HK-103	CAPACITOR
	C30	QCSA1HJ-101	CAPACITOR
	C31	QCYA1HK-103	CAPACITOR
	C32	QCYA1HK-223	CAPACITOR
	C33	QCYA1HK-223	CAPACITOR
	C34	QER40JM-476	E CAPACITOR
	C35	QCYA1HK-223	CAPACITOR
	C36	QCYA1HK-103	CAPACITOR
	C37	QCYA1HK-102	CAPACITOR
	C38	QCTA1CH-151	CAPACITOR
	C40	QCYA1HK-223	CAPACITOR
	C41	QCYA1HK-103	CAPACITOR
	C42	QCYA1HK-103	CAPACITOR
	C43	QER41HM-104	E CAPACITOR
	C44	QCYA1HK-103	CAPACITOR
	C45	QCYA1HK-183	CAPACITOR
	C46	QER41HM-105	E CAPACITOR
	C48	QCYA1HK-682	CAPACITOR
	C49	QER41EM-475	E CAPACITOR
	C50	QEE41CM-335	T CAPACITOR
	C51	QER40JM-476	E CAPACITOR
	C52	QCYA1HK-102	CAPACITOR
⚠	C54	QAT3001-011	TRIMMER CAPACITOR
	C55	QCYA1HK-223	CAPACITOR
	C56	QCYA1HK-223	CAPACITOR
	C57	QER40JM-107	E CAPACITOR
	C58	QCYA1HK-223	CAPACITOR
	C59	QCSA1HJ-680	CAPACITOR
	C60	QCYA1HK-223	CAPACITOR
	C63	QER40JM-107	E CAPACITOR
	C64	QCYA1HK-223	CAPACITOR
	C65	QCYA1HK-223	CAPACITOR
	C67	QCYA1HK-472	CAPACITOR
	C68	QCYA1HK-103	CAPACITOR
	C69	QCSA1HJ-470	CAPACITOR
	C70	QCYA1HK-103	CAPACITOR
	C71	QER41HM-105	E CAPACITOR
	C72	QCYA1HK-223	CAPACITOR
	C73	QCYA1HK-103	CAPACITOR
	C74	QCYA1HK-562	CAPACITOR
	C75	QCSA1HJ-220	CAPACITOR
	C76	QCFA1EZ-473	CAPACITOR
	C77	QCYA1HK-103	CAPACITOR
	C78	QCSA1HJ-151	CAPACITOR
	C79	QCYA1HK-223	CAPACITOR
	C80	QER40JM-476	E CAPACITOR
	C81	QCYA1HK-223	CAPACITOR
	C82	QCSA1HJ-101	CAPACITOR
	C84	QCYA1HK-223	CAPACITOR
	C85	QCYA1HK-103	CAPACITOR
	C86	QCYA1HK-223	CAPACITOR
	C87	QCYA1HK-223	CAPACITOR
	C88	QER40JM-476	E CAPACITOR
	C89	QCYA1HK-223	CAPACITOR
	C90	QCYA1HK-102	CAPACITOR
	C91	QCYA1HK-102	CAPACITOR
	C92	QER41CM-106	E CAPACITOR
	C93	QER41CM-106	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C94	QCSA1HJ-181	CAPACITOR
	C95	QCYA1HK-223	CAPACITOR
	C96	QCSA1HJ-270	CAPACITOR
	C97	QCYA1HK-223	CAPACITOR
	C98	QCTA1CH-7R0	CAPACITOR
	C99	QCSA1HJ-681	CAPACITOR
	C100	QCSA1HJ-331	CAPACITOR
	C102	QCFA1EZ-104	CAPACITOR
	C103	QCSA1HJ-151	CAPACITOR
	C104	QCFA1EZ-104	CAPACITOR
	C105	QER40JM-476	E CAPACITOR
	L1	PU53223-221J	COIL
	L2	PU53223-471J	COIL
	L3	PU53223-150J	COIL
	L4	PU53223-221J	COIL
	L5	PU53223-221J	COIL
	L6	PGZ01024-02	COIL
	L7	PU53223-150J	COIL
	L8	PU53223-471J	COIL
	L9	PU53223-221J	COIL
	L11	PU53223-221J	COIL
	L12	PU53223-470J	COIL
	L13	PU53223-221J	COIL
	L14	PU53618-821J	COIL
	L15	PU53223-471J	COIL
	L16	PGZ01025	COIL
	L17	PU53223-221J	COIL
	L18	PU53223-221J	COIL
	L19	PU53223-470J	COIL
	L20	PU53223-680J	COIL
	L21	PU48530-390J	COIL
	LPF1	PGZ01023-03	LOW PASS FILTER
	LPF2	PGZ01023-02	LOW PASS FILTER
	BPF1	PGZ01020-03	BAND PASS FILTER
	BPF2	PGZ01021-03	BAND PASS FILTER
	BPF3	PGZ01022-02	BAND PASS FILTER
	DL1	PU58971-3	COMB FILTER
	DL2	PGZ01019	DELAY LINE
⚠	X1	PU31449-4K	CRYSTAL RESONATOR
	TP GND	PU56008	TEST-PIN, X2
	TP1	PGZ01015	CHIP TEST-PIN, X11
	CN1	PU58844-112	CAP HOUSING
	CN2	PU58844-112R	CAP HOUSING
	CN3	PU58844-102	CAP HOUSING
	CN4	PGZ00723-10	CONNECTOR
	CN5	PGZ00723-11	CONNECTOR
	CN6	PU51945-08	CAP HOUSING
	CN7	PU51945-07	CAP HOUSING

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* 6.2.3 SERVO BOARD ASSY 03 *
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	PWBA	PGE10096A-01	SERVO BOARD ASSEMBLY
	IC1	BAF6305	IC
	IC2	UPD4030BG	IC
	IC3	M50767-604P	IC
	IC4	BA6302AF	IC
	IC5	BAF6305	IC
	IC6	BA6328F	IC
	IC7	BA6302AF	IC
	IC8	BA6993F	IC
⚠	IC9	MN50005JVES	IC
	IC10	BA226F	IC
	IC11	MN4053BS	IC
	IC12	HA11780MP	IC
⚠	IC13	UPD7564G-523	IC
⚠	IC14	BA833F	IC
	IC15	MN4081BS	IC
	IC16	UPD4066BG	IC
	IC17	UPC324G2	IC
	IC18	UPC339G2	IC
	IC19	AN6913	IC
	IC20	BA225F	IC
	IC21	MN4069UBS	IC
	IC22	MN4053BS	IC
	IC23	TC4S69F	IC
	IC24	BA4558F	IC
	IC25	TC4S69F	IC
	Q1	2SC2411K(QR)	TRANSISTOR
	Q2	DTC124EK	TRANSISTOR
	Q3	DTC124EK	TRANSISTOR
	Q4	DTC144EK	TRANSISTOR
	Q5	DTC124EK	TRANSISTOR
	Q6	DTC124EK	TRANSISTOR
	Q7	2SC2412K(RS)	TRANSISTOR
	Q8	2SA1037K	TRANSISTOR
	Q9	2SK621	FE TRANSISTOR
	Q10	2SK621	FE TRANSISTOR
	Q11	2SK621	FE TRANSISTOR
	Q12	2SC2412K(RS)	TRANSISTOR
	Q13	2SK208	FE TRANSISTOR
	Q14	2SC2412K(RS)	TRANSISTOR
	Q15	2SC2412K(RS)	TRANSISTOR
	Q16	DTA124EK	TRANSISTOR
	Q17	DTC124EK	TRANSISTOR
	Q18	2SC2412K(RS)	TRANSISTOR
	Q19	2SA1037K	TRANSISTOR
	Q20	2SC2412K(RS)	TRANSISTOR
	Q21	DTA124EK	TRANSISTOR
	Q22	DTC124EK	TRANSISTOR
	Q23	2SA1037K	TRANSISTOR
	Q24	2SC2412K(RS)	TRANSISTOR
	Q25	2SA1037K	TRANSISTOR
	Q26	DTC124EK	TRANSISTOR
	Q27	DTC124EK	TRANSISTOR
⚠	Q28	2SA1282AF	TRANSISTOR
	Q29	DTC124EK	TRANSISTOR
	Q30	DTC124EK	TRANSISTOR
	D1	DA204K	DIODE
	D2	DAN202K	DIODE
	D3	DA204K	DIODE
	D4	1SS133	DIODE
	D5	DA204K	DIODE
	D6	DAN202K	DIODE
	D7	DA204K	DIODE
	D8	DA204K	DIODE
	D9	DA204K	DIODE
	D10	DAN202K	DIODE
	D11	DA204K	DIODE
	D12	DAN202K	DIODE
	D13	11DQ04	DIODE
	D14	1S2473	DIODE
	D15	DAN202K	DIODE
	D16	DAP202K	DIODE

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R1	QRSA08J-103YN	RESISTOR
	R2	QRSA08J-102YN	RESISTOR
	R3	QRSA08J-684YN	RESISTOR
	R4	QRSA08J-332YN	RESISTOR
	R5	QRSA08J-331YN	RESISTOR
	R6	QRSA08J-222YN	RESISTOR
	R7	QRSA08J-103YN	RESISTOR
	R8	QRSA08J-821YN	RESISTOR
	R9	QRSA08J-102YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R12	QRSA08J-224YN	RESISTOR
	R13	QRSA08J-684YN	RESISTOR
	R14	QRSA08J-103YN	RESISTOR
	R15	QRSA08J-103YN	RESISTOR
	R16	QRSA08J-103YN	RESISTOR
	R17	QRSA08J-472YN	RESISTOR
	R18	QRSA08J-103YN	RESISTOR
	R19	QRSA08J-683YN	RESISTOR
	R20	QRSA08J-223YN	RESISTOR
	R21	QRSA08J-223YN	RESISTOR
	R22	QRSA08J-223YN	RESISTOR
	R23	QRSA08J-223YN	RESISTOR
	R24	QRSA08J-223YN	RESISTOR
	R25	QRSA08J-103YN	RESISTOR
	R26	QRSA08J-223YN	RESISTOR
	R27	QVZ3531-104	V RESISTOR , DRUM DISCRI
	R28	QRSA08J-224YN	RESISTOR
	R29	QRSA08J-104YN	RESISTOR
	R30	QRSA08J-822YN	RESISTOR
	R31	QRSA08J-223YN	RESISTOR
	R32	QRSA08J-103YN	RESISTOR
	R33	QRSA08J-472YN	RESISTOR
	R34	QRSA08J-563YN	RESISTOR
	R35	QRSA08J-564YN	RESISTOR
	R36	QRSA08J-682YN	RESISTOR
	R37	QRSA08J-123YN	RESISTOR
	R38	QRSA08J-103YN	RESISTOR
	R39	QRSA08J-102YN	RESISTOR
	R40	QRSA08J-223YN	RESISTOR
	R41	QRSA08J-102YN	RESISTOR
	R42	QRSA08J-103YN	RESISTOR
	R43	QRSA08J-223YN	RESISTOR
	R44	QRSA08J-223YN	RESISTOR
	R45	QVZ3531-153	V RESISTOR , H DISCRI
	R46	QRSA08J-513YN	RESISTOR
	R47	QRD167J-472	RESISTOR
	R48	QRSA08J-184YN	RESISTOR
	R49	QVZ3531-473	V RESISTOR , CAP DISCRI
	R50	QRSA08J-823YN	RESISTOR
	R51	QRSA08J-823YN	RESISTOR
	R52	QRSA08J-222YN	RESISTOR
	R53	QRSA08J-334YN	RESISTOR
	R54	QRSA08J-333YN	RESISTOR
	R55	QRSA08J-103YN	RESISTOR
	R56	QRSA08J-104YN	RESISTOR
	R57	QRSA08J-105YN	RESISTOR
	R58	QRSA08J-103YN	RESISTOR
	R59	QRSA08J-102YN	RESISTOR
	R60	QRSA08J-103YN	RESISTOR
	R61	QRSA08J-123YN	RESISTOR
	R62	QRSA08J-222YN	RESISTOR
	R63	QRSA08J-222YN	RESISTOR
	R64	QRSA08J-102YN	RESISTOR
	R65	QRSA08J-222YN	RESISTOR
	R66	QRSA08J-102YN	RESISTOR
	R67	QRSA08J-272YN	RESISTOR
	R68	QRSA08J-272YN	RESISTOR
	R69	QRSA08J-272YN	RESISTOR
	R70	QRSA08J-222YN	RESISTOR
	R71	QRSA08J-393YN	RESISTOR
	R73	QRSA08J-224YN	RESISTOR
	R74	QRSA08J-682YN	RESISTOR
⚠	R75	QRSA08J-0R0Y	RESISTOR
	R76	QRSA08J-153YN	RESISTOR
	R77	QRSA08J-153YN	RESISTOR
	R78	QRSA08J-392YN	RESISTOR
	R79	QRSA08J-103YN	RESISTOR
	R80	PGZ00956	RESISTOR ARRAY
	R81	QRSA08J-563YN	RESISTOR
	R82	QRSA08J-103YN	RESISTOR
	R83	QRSA08J-102YN	RESISTOR
	R84	QRSA08J-104YN	RESISTOR
	R85	QRSA08J-103YN	RESISTOR
	R86	QRSA08J-333YN	RESISTOR
	R87	QRSA08J-102YN	RESISTOR
	R88	QRSA08J-332YN	RESISTOR
	R89	QRSA08J-333YN	RESISTOR
	R90	QRSA08J-562YN	RESISTOR
	R91	QRSA08J-334YN	RESISTOR
	R92	QRSA08J-472YN	RESISTOR
	R93	QRSA08J-222YN	RESISTOR
	R95	QRSA08J-682YN	RESISTOR
	R96	QRSA08J-103YN	RESISTOR
	R97	QRSA08J-103YN	RESISTOR
	R98	QRSA08J-105YN	RESISTOR
	R99	QRSA08J-331YN	RESISTOR
	R100	QRSA08J-103YN	RESISTOR
	R101	QRSA08J-103YN	RESISTOR
	R102	QRSA08J-104YN	RESISTOR
	R103	QVZ3531-474	V RESISTOR , CH2 SW POS
	R104	QRSA08J-104YN	RESISTOR
	R105	QVZ3531-474	V RESISTOR , CH1 SW POS
	R106	QRSA08J-104YN	RESISTOR
	R107	QRSA08J-103YN	RESISTOR
	R108	QRSA08J-223YN	RESISTOR
	R110	QRSA08J-223YN	RESISTOR
	R111	QRSA08J-223YN	RESISTOR
	R112	QRSA08J-473YN	RESISTOR
	R113	QVZ3531-224	V RESISTOR , V P WIDTH
	R114	QVZ3531-224	V RESISTOR , H PDELAY
	R115	QRSA08J-103YN	RESISTOR
	R116	QRSA08F-394YN	RESISTOR
	R117	QRSA08F-394YN	RESISTOR
	R118	QRSA08J-223YN	RESISTOR
	R119	QRSA08J-223YN	RESISTOR
	R120	QRSA08J-223YN	RESISTOR
	R121	QRSA08J-102YN	RESISTOR
	R122	QRSA08J-102YN	RESISTOR
	R123	QRSA08J-223YN	RESISTOR
	R124	QRSA08J-223YN	RESISTOR
	R125	QRSA08J-824YN	RESISTOR
	R126	QRSA08J-684YN	RESISTOR
	R127	QVZ3531-474	V RESISTOR, -X1 SUB TR
	R128	QRSA08J-103YN	RESISTOR
	R129	QRSA08J-394YN	RESISTOR
	R130	QRSA08J-223YN	RESISTOR
	R131	QRSA08J-334YN	RESISTOR
	R132	QRSA08J-104YN	RESISTOR
	R133	QRSA08J-393YN	RESISTOR
	R134	QRSA08J-224YN	RESISTOR
	R135	QRSA08J-102YN	RESISTOR
	R136	QRSA08J-153YN	RESISTOR
	R137	QRSA08J-103YN	RESISTOR
	R138	QVZ3531-103	V RESISTOR , SUB TR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R139	QRSA08J-103YN	RESISTOR
	R141	QRSA08J-223YN	RESISTOR
	R142	QRSA08J-393YN	RESISTOR
	R143	QRSA08J-333YN	RESISTOR
	R144	QRSA08J-104YN	RESISTOR
	R145	QRSA08J-473YN	RESISTOR
	R147	QVZ3531-104	V RESISTOR , REC SW POS-1
	R148	QRSA08J-105YN	RESISTOR
	R149	QRSA08J-394YN	RESISTOR
⚠	R150	QRSA08J-104YN	RESISTOR
	R151	QRSA08J-223YN	RESISTOR
	R152	QRSA08J-103YN	RESISTOR
	R153	QRSA08J-103YN	RESISTOR
	R154	QRSA08J-682YN	RESISTOR
	R155	QRSA08J-823YN	RESISTOR
	R156	QRSA08J-103YN	RESISTOR
	R157	QRSA08J-272YN	RESISTOR
	R158	QRSA08J-824YN	RESISTOR
	R159	QRSA08J-564YN	RESISTOR
	R160	QRSA08J-105YN	RESISTOR
	R161	QRSA08J-334YN	RESISTOR
	R162	QRSA08J-103YN	RESISTOR
	R163	QRSA08J-473YN	RESISTOR
	R164	QRSA08J-684YN	RESISTOR
	R165	QRSA08J-103YN	RESISTOR
	R166	QRSA08J-474YN	RESISTOR
	R167	QRSA08J-103YN	RESISTOR
	R168	QRSA08J-103YN	RESISTOR
	R169	QRSA08J-103YN	RESISTOR
	R170	QRSA08J-105YN	RESISTOR
	R171	QRSA08J-563YN	RESISTOR
	R172	QRSA08J-0R0Y	RESISTOR
	R173	QRSA08J-222YN	RESISTOR
	R174	QRSA08J-123YN	RESISTOR
	R175	QRSA08J-123YN	RESISTOR
	R176	QRSA08J-103YN	RESISTOR
	R177	QRSA08J-123YN	RESISTOR
	R178	QRSA08J-223YN	RESISTOR
	R179	QRSA08J-103YN	RESISTOR
	R180	QRSA08J-123YN	RESISTOR
	R181	QRSA08J-331YN	RESISTOR
	R182	QRSA08J-122YN	RESISTOR
	R183	QRSA08J-273YN	RESISTOR
	R184	QRSA08J-472YN	RESISTOR
	R185	QRSA08J-104YN	RESISTOR
	R186	QRSA08J-104YN	RESISTOR
	R187	QRSA08J-224YN	RESISTOR
	R188	QRSA08J-224YN	RESISTOR
	R189	QRSA08J-103YN	RESISTOR
	R190	QRSA08J-103YN	RESISTOR
	R191	QRSA08J-153YN	RESISTOR
	R192	QRSA08J-103YN	RESISTOR
	R193	QRSA08J-0R0Y	RESISTOR
	R195	QRSA08J-102YN	RESISTOR
	R196	QRSA08J-102YN	RESISTOR
	R197	QRSA08J-102YN	RESISTOR
	R198	QRSA08J-102YN	RESISTOR
	R199	QRSA08J-102YN	RESISTOR
	R200	QRSA08J-102YN	RESISTOR
	R201	QRSA08J-102YN	RESISTOR
	R202	QRSA08J-102YN	RESISTOR
	R203	QRSA08J-102YN	RESISTOR
	R204	QRSA08J-102YN	RESISTOR
	R205	QRSA08J-102YN	RESISTOR
	R206	QRSA08J-103YN	RESISTOR
	R207	QRSA08J-223YN	RESISTOR
	R208	QRSA08J-563YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R209	QRSA08J-103YN	RESISTOR
	R210	QRSA08J-334YN	RESISTOR
	C1	QER41HM-105	E CAPACITOR
	C2	QCYA1HK-682	CAPACITOR
	C3	QCYA1HK-472	CAPACITOR
	C4	QER40JM-226	E CAPACITOR
	C5	QER41CM-226	E CAPACITOR
	C6	QER41CM-476	E CAPACITOR
	C7	QCYA1HK-102	CAPACITOR
	C8	QCYA1HK-102	CAPACITOR
	C9	QER41CM-476	E CAPACITOR
	C10	QER41CM-476	E CAPACITOR
	C11	QCYA1HK-102	CAPACITOR
	C12	QER41CM-107	E CAPACITOR
	C13	QER41CM-476	E CAPACITOR
	C14	QCYA1HK-102	CAPACITOR
	C15	QCTA1CH-101	CAPACITOR
	C16	QER41CM-476	E CAPACITOR
	C17	QCYA1HK-102	CAPACITOR
	C18	QFP42AJ-272	PP CAPACITOR
	C19	QCYA1HJ-103	CAPACITOR
	C20	QCYA1HK-102	CAPACITOR
	C21	QER41CM-476	E CAPACITOR
	C22	QCYA1HK-223	CAPACITOR
	C23	QER41AM-226	E CAPACITOR
	C24	QCTA1CH-101	CAPACITOR
	C25	QCYA1HK-103	CAPACITOR
	C26	QER41CM-106	E CAPACITOR
	C27	QER41CM-226	E CAPACITOR
	C28	QCYA1HK-333	CAPACITOR
	C29	QER41CM-476	E CAPACITOR
	C30	QCYA1HK-123	CAPACITOR
	C31	QCYA1HK-102	CAPACITOR
	C32	QFP42AJ-102	PP CAPACITOR
	C33	QCYA1HK-102	CAPACITOR
	C34	QER41CM-476	E CAPACITOR
	C35	QCYA1HK-472	CAPACITOR
	C36	QER41CM-226	E CAPACITOR
	C37	QER41HM-474	E CAPACITOR
	C38	QFN41HJ-223	M CAPACITOR
	C39	QCYA1HK-103	CAPACITOR
	C40	QCYA1HK-102	CAPACITOR
	C41	QER41CM-476	E CAPACITOR
	C42	QER41CM-226	E CAPACITOR
	C43	QCTA1CH-271	CAPACITOR
	C44	QFN41HK-102	M CAPACITOR
	C45	QEF81CM-105	TANTAL CAPACITOR
	C46	QER41AM-476	E CAPACITOR
	C47	QCTA1CH-390	CAPACITOR
	C48	QCTA1CH-121	CAPACITOR
	C49	QFZ9011-104	MM CAPACITOR
	C50	QER41CM-476	E CAPACITOR
	C51	QCYA1HK-102	CAPACITOR
	C52	QER41HM-105	E CAPACITOR
	C53	QCYA1HK-102	CAPACITOR
	C54	QCYA1HK-102	CAPACITOR
	C55	QCYA1HK-152	CAPACITOR
⚠	C56	QCTA1CH-330	CAPACITOR
⚠	C57	QCTA1CH-330	CAPACITOR
	C58	QCYA1HK-561	CAPACITOR
	C60	QER41CM-106	E CAPACITOR
	C61	QCYA1HK-102	CAPACITOR
	C62	QCYA1HK-103	CAPACITOR
	C63	QFP41HF-183	PP CAPACITOR
	C64	QFP41HF-183	PP CAPACITOR
	C65	QFP41HF-183	PP CAPACITOR
	C66	QFP41HF-183	PP CAPACITOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C67	QER41HM-474	E CAPACITOR
	C68	QEF81CM-105	TANTAL CAPACITOR
	C70	QER41AM-226	E CAPACITOR
	C71	QFM41HJ-682M	M CAPACITOR
	C72	QFM41HJ-682M	M CAPACITOR
	C73	QER41CM-106	E CAPACITOR
	C74	QCYA1HK-682	CAPACITOR
	C75	QCYA1HK-122	CAPACITOR
	C76	QCYA1HJ-102	CAPACITOR
	C77	QCYA1HJ-102	CAPACITOR
⚠	C78	QCTA1CH-101	CAPACITOR
⚠	C79	QCTA1CH-101	CAPACITOR
	C80	QCYA1HK-103	CAPACITOR
	C81	QER41CM-476	E CAPACITOR
	C82	QER41HM-335	E CAPACITOR
	C83	QFZ9011-104	MM CAPACITOR
	C84	QCYA1HK-102	CAPACITOR
	C85	QCYA1HK-333	CAPACITOR
	C86	QFN41HJ-333	M CAPACITOR
	C87	QFZ9011-104	MM CAPACITOR
	C88	QFZ9011-683	MM CAPACITOR
	C89	QER41CM-226	E CAPACITOR
	C90	QEL60JM-226G	E CAPACITOR
	C91	QEL60JM-226G	E CAPACITOR
	C92	QFN41HJ-273	M CAPACITOR
	C93	QCYA1HK-333	CAPACITOR
	C94	QFN41HJ-123	M CAPACITOR
	C95	QCTA1CH-331	CAPACITOR
⚠	C96	QCYA1HK-102	CAPACITOR
	C97	QCYA1HK-102	CAPACITOR
	C98	QFZ9011-104	MM CAPACITOR
	C99	QFZ9011-104	MM CAPACITOR
	C100	QEP41HM-105	NP E CAPACITOR
	C101	QFN41HK-562	M CAPACITOR
	C102	QEP41HM-474	NP E CAPACITOR
	C103	QEP41AM-106	NP E CAPACITOR
	C104	QFZ9011-823	M CAPACITOR
	C105	QER41CM-476	E CAPACITOR
	C106	QCYA1HK-102	CAPACITOR
	C107	QER41CM-476	E CAPACITOR
	C108	QER41CM-476	E CAPACITOR
	C109	QER41CM-476	E CAPACITOR
	C110	QCTA1CH-331	CAPACITOR
	C111	QCYA1HK-103	CAPACITOR
	C112	QCYA1HK-103	CAPACITOR
	C113	QCYA1HK-123	CAPACITOR
	C114	QER41CM-476	E CAPACITOR
	C115	QER41HM-475	E CAPACITOR
	C117	QCTA1CH-560	CAPACITOR
	C118	QER41CM-476	E CAPACITOR
	C119	QER40JM-226	E CAPACITOR
	C120	QCYA1HK-562	CAPACITOR
	C121	QCYA1HK-272	CAPACITOR
	C122	QCYA1HK-561	CAPACITOR
	C123	QCYA1HK-123	CAPACITOR
	C124	QER41HM-105	E CAPACITOR
	L1	PU53223-101J	PEAKING COIL
	L3	PU53223-101J	PEAKING COIL
	L4	PU53223-101J	PEAKING COIL
	L5	PU53223-101J	PEAKING COIL
	L6	PU53223-101J	PEAKING COIL
	L7	PU53223-101J	PEAKING COIL
	L8	PU53618-471J	PEAKING COIL
	L9	PU53223-101J	PEAKING COIL
	L10	PU53223-101J	PEAKING COIL
	L11	PU53223-101J	PEAKING COIL
	L12	PU53223-101J	PEAKING COIL
	L13	PGZ00828-470	COIL
	L14	PU55811-391	COIL
⚠	X1	PU55407	CRYSTAL RESONATOR
⚠	X2	PU49487-2	CRYSTAL RESONATOR
⚠	X3	PU47701	CRYSTAL RESONATOR
	TH1	ERT-D2FHL103S	THERMISTOR
	TH2	ERT-D2FHL103S	THERMISTOR
	TP1	PU56008	TEST POINT, X31
	CN1	PU58844-110Y	CAP HOUSING
	CN2	PU58844-108	CAP HOUSING
	CN3	PU58844-105	CAP HOUSING
	CN4	PU58844-3	CAP HOUSING
	CN5	PU58844-102	CAP HOUSING
	CN6	PU54537-6	CAP HOUSING
	CN7	PU56259-8	CAP HOUSING
	CN8	PU58844-102R	CAP HOUSING
	CN9	PU58844-102Y	CAP HOUSING
	CN10	PU58844-109	CAP HOUSING
	CN11	PU58844-3	CAP HOUSING

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* 6.2.4 MDA BOARD ASSY 04 *
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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PGE40243A	MDA BOARD ASSEMBLY
	IC1	AN6671K	IC
⚠	Q1	2SA1020	TRANSISTOR
	D1	11DQ04	DIODE
	R1	QRD161J-332	RESISTOR
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRSA08J-223YN	RESISTOR
	R6	QRSA08J-561YN	RESISTOR
	R7	QRSA08J-473YN	RESISTOR
	R8	QRSA08J-333YN	RESISTOR
	R9	QRSA08J-472YN	RESISTOR
	R10	QRD161J-223	RESISTOR
	R11	QRD161J-223	RESISTOR
	R12	QRD161J-392	RESISTOR
	C1	QEK41CM-106	E CAPACITOR
	C2	QEK41HM-225	E CAPACITOR
	C3	QEK41HM-225	E CAPACITOR
	C4	QFN41HJ-223	M CAPACITOR
	C5	QEK41HM-225	E CAPACITOR
	C6	QEK41HM-225	E CAPACITOR
	C7	QEK41EM-336	E CAPACITOR
	C8	QEM41EK-106	E CAPACITOR
	C9	QET41EM-107	E CAPACITOR
	C10	QFN41HJ-333	M CAPACITOR
	IB1	PU35238-006	IN LINE BLOCK
	L1	PU55811-391	COIL
	L2	PU49994-120	COIL
⚠	TH1	PU52108-2R2	POSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SLD1	PRS40007	SHIELD CASE 1
	SLD2	PRS40008	SHIELD CASE 2
	CN1	PU56258-8	CAP HOUSING
	CN2	PU53587-12	CAP HOUSING

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* 6.2.5 AUDIO BOARD ASSY 05 *

	PWBA	PGE10037B-03	AUDIO BOARD ASSY
	IC1	NJM4556MB	IC
	IC2	NJM4556MB	IC
	IC3	TK15021	IC
	IC4	TA7361AF	IC
	IC5	AN3991NS	IC
	IC6	TA7361AF	IC
	IC7	AN3991NS	IC
	IC9	NR0860	IC
	IC10	TK15021	IC
	IC12	VC2024A	IC
	IC13	AN3926S	IC
	IC14	TK15021	IC
	IC15	NJM4556MB	IC
	IC16	BA226F	IC
	IC17	BA634F	IC
	IC18	TK15021	IC
	IC19	NJM4556MB	IC
	Q1	2SD601	TRANSISTOR
	Q2	2SB709	TRANSISTOR
	Q3	2SD601	TRANSISTOR
	Q4	2SC2405(ST)	TRANSISTOR
	Q5	2SC2405(ST)	TRANSISTOR
	Q6	2SD1328S,T	TRANSISTOR
	Q7	2SD601	TRANSISTOR
	Q8	DTA124EK	TRANSISTOR
	Q9	2SD601	TRANSISTOR
	Q10	2SB709	TRANSISTOR
	Q11	2SC2405(ST)	TRANSISTOR
	Q12	2SC2405(ST)	TRANSISTOR
	Q13	2SD1328S,T	TRANSISTOR
	Q14	2SD601A	TRANSISTOR
	Q15	2SD601	TRANSISTOR
	Q16	2SD637S	TRANSISTOR
	Q17	2SD637S	TRANSISTOR
	Q18	2SB643Q	TRANSISTOR
	Q19	2SD638Q	TRANSISTOR
	Q20	2SC2412K	TRANSISTOR
	Q21	FMW3	TRANSISTOR
	Q22	2SD601A	TRANSISTOR
	Q24	2SD973AR	TRANSISTOR
	Q25	2SA1037K	TRANSISTOR
	Q26	2SD601A	TRANSISTOR
	Q27	2SA1037K	TRANSISTOR
	Q28	2SA1037K	TRANSISTOR
	Q29	2SD601	TRANSISTOR
	Q30	2SD601	TRANSISTOR
	Q31	2SA1037K	TRANSISTOR
	Q33	DTC124EK	TRANSISTOR
	Q34	DTC124EK	TRANSISTOR
	Q35	DTC124EK	TRANSISTOR
	Q36	DTC124EK	TRANSISTOR
	Q37	DTC124EK	TRANSISTOR
	Q38	DTC124EK	TRANSISTOR
	Q39	DTC124EK	TRANSISTOR
	Q40	DTC124EK	TRANSISTOR
	Q41	DTA124EK	TRANSISTOR
	Q43	DTC124EK	TRANSISTOR
	Q44	DTC124EK	TRANSISTOR
	Q45	DTA124EK	TRANSISTOR
	Q47	DTC124EK	TRANSISTOR
	Q48	DTA124EK	TRANSISTOR
	Q49	DTC124EK	TRANSISTOR
	Q50	DTA124EK	TRANSISTOR
	Q51	DTA124EK	TRANSISTOR
	Q52	DTC124EK	TRANSISTOR
	Q53	2SB709	TRANSISTOR
	Q54	DTA124EK	TRANSISTOR
	Q56	2SD1328S,T	TRANSISTOR
	Q57	2SD1328S,T	TRANSISTOR
	Q58	DTC124EK	TRANSISTOR
	Q59	DTC124EK	TRANSISTOR
	Q60	DTC124EK	TRANSISTOR
	Q61	2SD601	TRANSISTOR
	Q62	2SD1328S,T	TRANSISTOR
	Q63	DTC124EK	TRANSISTOR
	Q65	FMS3	TRANSISTOR
	Q66	DTC124EK	TRANSISTOR
	Q67	FMW3	TRANSISTOR
	Q68	FMW3	TRANSISTOR
	Q69	2SD601(S)	TRANSISTOR
	Q70	2SD601(S)	TRANSISTOR
	Q71	2SD601(S)	TRANSISTOR
	Q72	DTC124EK	TRANSISTOR
	Q73	DTC124EK	TRANSISTOR
	Q74	DTC124EK	TRANSISTOR
	Q75	DTC124EK	TRANSISTOR
	Q76	DTC124EK	TRANSISTOR
	Q77	2SD601	TRANSISTOR
	Q78	DTC124EK	TRANSISTOR
	Q79	DTC124EK	TRANSISTOR
	Q80	DTC124EK	TRANSISTOR
	Q81	DTC124EK	TRANSISTOR
	Q82	DTC124EK	TRANSISTOR
	Q83	2SD601	TRANSISTOR
	Q87	2SD601	TRANSISTOR
	Q88	2SD601	TRANSISTOR
	Q89	DTC124EK	TRANSISTOR
	Q90	DTC124EK	TRANSISTOR
	Q92	2SD601	TRANSISTOR
	Q93	DTC124EK	TRANSISTOR
	Q94	DTA124EK	TRANSISTOR
	Q95	DTC124EK	TRANSISTOR
	Q96	DTA124EK	TRANSISTOR
	Q101	FMG2	TRANSISTOR
	Q102	FMG2	TRANSISTOR
	Q103	DTC144EK	TRANSISTOR
	Q104	DTC144WK	TRANSISTOR
	D1	0A90	DIODE
	D2	0A90	DIODE
	D3	0A90	DIODE
	D4	0A90	DIODE
	D5	DAP202K	DIODE
	D7	DAP202K	DIODE
	D8	DAP202K	DIODE
	D9	DAP202K	DIODE
	D10	DAP202K	DIODE
	D11	DAP202K	DIODE
	D12	DA204K	DIODE

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D13	DAN202K	CHIP DIODE ARRAY
	D14	DAP202K	DIODE
	D15	DAP202K	DIODE
	D101	DAN202K	CHIP DIODE ARRAY
	R1	QRSA08G-223YN	RESISTOR
	R2	QRSA08G-223YN	RESISTOR
	R3	QRSA08G-223YN	RESISTOR
	R4	QRSA08G-223YN	RESISTOR
	R5	QRSA08J-223YN	RESISTOR
	R6	QRSA08G-223YN	RESISTOR
	R7	QRSA08G-223YN	RESISTOR
	R8	QRSA08J-473YN	RESISTOR
	R9	QRSA08J-473YN	RESISTOR
	R11	QRSA08J-223YN	RESISTOR
	R12	QRSA08G-223YN	RESISTOR
	R13	QRSA08G-223YN	RESISTOR
	R14	QRSA08J-473YN	RESISTOR
	R15	QRSA08J-473YN	RESISTOR
	R17	QRSA08J-103YN	RESISTOR
	R18	QRSA08J-103YN	RESISTOR
	R21	QRSA08J-473YN	RESISTOR
	R22	QRSA08J-684YN	RESISTOR
	R23	QRSA08J-332YN	RESISTOR
	R24	QRSA08J-823YN	RESISTOR
	R25	QRSA08J-560YN	RESISTOR
	R26	QRSA08J-103YN	RESISTOR
	R27	QRSA08J-392YN	RESISTOR
	R28	QRSA08J-102YN	RESISTOR
	R29	QRSA08J-474YN	RESISTOR
	R30	QRSA08J-682YN	RESISTOR
	R31	QRSA08J-823YN	RESISTOR
	R32	QRSA08J-222YN	RESISTOR
	R33	QRSA08J-221YN	RESISTOR
	R34	QRSA08J-105YN	RESISTOR
	R35	QRSA08J-332YN	RESISTOR
	R36	QRSA08J-222YN	RESISTOR
	R37	QRSA08J-221YN	RESISTOR
	R39	QRSA08J-473YN	RESISTOR
	R40	QVPC402-103	V RESISTOR
	R41	QRSA08J-223YN	RESISTOR
	R42	QRSA08J-332YN	RESISTOR
	R43	QRSA08J-121YN	RESISTOR
	R44	QRSA08J-393YN	RESISTOR
	R45	QRSA08J-681YN	RESISTOR
	R46	QVPC402-222	V RESISTOR
	R47	QRSA08J-102YN	RESISTOR
	R48	QVPC402-222	V RESISTOR
	R49	QRSA08J-223YN	RESISTOR
	R51	QVPC402-222	V RESISTOR
	R52	QRSA08J-101YN	RESISTOR
	R53	QRSA08J-105YN	RESISTOR
	R54	QRSA08J-105YN	RESISTOR
	R55	QRSA08J-222YN	RESISTOR
	R56	QRSA08J-102YN	RESISTOR
	R57	QRSA08J-392YN	RESISTOR
	R58	QRSA08J-562YN	RESISTOR
	R59	QRSA08J-562YN	RESISTOR
	R60	QRSA08J-822YN	RESISTOR
	R61	QRSA08J-102YN	RESISTOR
	R64	QRSA08J-473YN	RESISTOR
	R65	QRSA08J-684YN	RESISTOR
	R66	QRSA08J-332YN	RESISTOR
	R67	QRSA08J-823YN	RESISTOR
	R68	QRSA08J-560YN	RESISTOR
	R69	QRSA08J-103YN	RESISTOR
	R70	QRSA08J-392YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R71	QRSA08J-474YN	RESISTOR
	R72	QRSA08J-823YN	RESISTOR
	R73	QRSA08J-682YN	RESISTOR
	R74	QRSA08J-222YN	RESISTOR
	R75	QRSA08J-221YN	RESISTOR
	R76	QRSA08J-103YN	RESISTOR
	R77	QRSA08J-332YN	RESISTOR
	R78	QRSA08J-222YN	RESISTOR
	R79	QRSA08J-221YN	RESISTOR
	R81	QRSA08J-473YN	RESISTOR
	R82	QRSA08J-223YN	RESISTOR
	R83	QRSA08J-332YN	RESISTOR
	R84	QRSA08J-121YN	RESISTOR
	R85	QRSA08J-393YN	RESISTOR
	R86	QRSA08J-681YN	RESISTOR
	R87	QVPC402-222	V RESISTOR
	R88	QRSA08J-102YN	RESISTOR
	R89	QVPC402-222	V RESISTOR
	R90	QRSA08J-223YN	RESISTOR
	R92	QVPC402-222	V RESISTOR
	R93	QRSA08J-101YN	RESISTOR
	R94	QRSA08J-105YN	RESISTOR
	R95	QRSA08J-105YN	RESISTOR
	R96	QRSA08J-222YN	RESISTOR
	R97	QRSA08J-102YN	RESISTOR
	R98	QRSA08J-392YN	RESISTOR
	R99	QRSA08J-562YN	RESISTOR
	R100	QRSA08J-562YN	RESISTOR
	R101	QRSA08J-822YN	RESISTOR
	R102	QRSA08J-102YN	RESISTOR
	R103	QRSA08J-223YN	RESISTOR
	R104	QVPC402-683	V RESISTOR
	R105	QVPC402-683	V RESISTOR
	R110	QRSA08J-182YN	RESISTOR
	R111	QRSA08J-302YN	RESISTOR
	R112	QRSA08J-331YN	RESISTOR
	R116	QRSA08J-182YN	RESISTOR
	R117	QRSA08J-302YN	RESISTOR
	R118	QRSA08J-331YN	RESISTOR
	R119	QRSA08J-183YN	RESISTOR
	R120	QRSA08J-103YN	RESISTOR
	R121	QRSA08J-103YN	RESISTOR
	R123	QRSA08J-223YN	RESISTOR
	R124	QRZ0054-100	FUSIBLE RESISTOR
	R125	QRSA08J-100YN	RESISTOR
	R126	QRSA08J-100YN	RESISTOR
	R127	QRSA08J-333YN	RESISTOR
	R128	QRSA08J-333YN	RESISTOR
	R151	QRSA08J-823YN	RESISTOR
	R152	QRSA08J-102YN	RESISTOR
	R153	QVPC402-222	V RESISTOR
	R154	QVZ3531-332	V RESISTOR
	R155	ERT-D2FGL301S	THERMISTOR
	R156	QRSA08J-221YN	RESISTOR
	R157	QRSA08J-102YN	RESISTOR
	R158	ERT-D2FGL301S	THERMISTOR
	R159	QVPC402-222	V RESISTOR
	R160	QVZ3531-332	V RESISTOR
	R161	QVPC402-102	V RESISTOR
	R162	QRSA08J-272YN	RESISTOR
	R163	QVPC402-102	V RESISTOR
	R164	QRSA08J-102YN	RESISTOR
	R165	QRSA08J-104YN	RESISTOR
	R166	QRSA08J-104YN	RESISTOR
	R167	QRSA08J-102YN	RESISTOR
	R168	QRSA08J-152YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R169	QRSA08J-332YN	RESISTOR
	R170	QRSA08J-332YN	RESISTOR
	R171	QRSA08J-152YN	RESISTOR
	R172	QRSA08J-220YN	RESISTOR
	R173	QRSA08J-472YN	RESISTOR
	R174	QRSA08J-220YN	RESISTOR
	R175	QRSA08J-102YN	RESISTOR
	R177	QRSA08J-102YN	RESISTOR
	R178	QRSA08J-102YN	RESISTOR
	R179	QRSA08J-102YN	RESISTOR
	R180	QRSA08J-102YN	RESISTOR
	R182	QRSA08J-223YN	RESISTOR
	R183	QRSA08J-333YN	RESISTOR
	R185	QRSA08J-103YN	RESISTOR
	R186	QRSA08J-103YN	RESISTOR
	R187	QRSA08J-223YN	RESISTOR
	R188	QRSA08J-223YN	RESISTOR
	R189	QRSA08J-473YN	RESISTOR
	R190	QVPC402-153	RESISTOR
	R191	QRSA08J-103YN	RESISTOR
	R192	QRSA08J-473YN	RESISTOR
	R193	QRSA08J-473YN	RESISTOR
	R194	QRSA08J-104YN	RESISTOR
	R195	QRSA08J-101YN	RESISTOR
	R196	QRSA08J-472YN	RESISTOR
	R197	QRSA08J-221YN	RESISTOR
	R198	QVPC402-152	V RESISTOR
	R199	QRSA08J-221YN	RESISTOR
	R200	QVPC402-152	V RESISTOR
	R202	QRD161J-681	RESISTOR
	R203	QRSA08J-104YN	RESISTOR
	R204	QRSA08J-472YN	RESISTOR
	R206	QRSA08J-333YN	RESISTOR
	R207	QRSA08J-104YN	RESISTOR
	R208	QRSA08J-222YN	RESISTOR
	R209	QRSA08J-104YN	RESISTOR
	R210	QRSA08J-222YN	RESISTOR
	R211	QRSA08J-681YN	RESISTOR
	R212	QRSA08J-681YN	RESISTOR
	R213	QRSA08J-104YN	RESISTOR
	R214	QRSA08J-472YN	RESISTOR
	R215	QRD161J-152	RESISTOR
	R216	ERT-D2FHL102S	THERMISTOR
	R218	QRSA08J-332YN	RESISTOR
	R219	QRSA08J-223YN	RESISTOR
	R220	QRSA08J-223YN	RESISTOR
	R221	QRSA08J-472YN	RESISTOR
	R225	QRSA08J-104YN	RESISTOR
	R226	QRSA08J-104YN	RESISTOR
	R227	QRSA08J-223YN	RESISTOR
	R228	QRSA08J-821YN	RESISTOR
	R229	QRSA08J-822YN	RESISTOR
	R230	QRSA08J-472YN	RESISTOR
	R231	QRSA08J-472YN	RESISTOR
	R232	QRSA08J-222YN	RESISTOR
	R233	QRSA08J-103YN	RESISTOR
	R234	QRSA08J-332YN	RESISTOR
	R235	QRSA08J-332YN	RESISTOR
	R236	QRSA08J-103YN	RESISTOR
	R237	QRSA08J-333YN	RESISTOR
	R239	QRSA08J-333YN	RESISTOR
	R241	QVPC402-224	V RESISTOR
	R242	QRSA08J-474YN	RESISTOR
	R243	QVPC402-224	V RESISTOR
	R244	QRSA08J-474YN	RESISTOR
	R245	QRSA08J-183YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R246	QRSA08J-472YN	RESISTOR
	R247	QRSA08J-183YN	RESISTOR
	R248	QRSA08J-682YN	RESISTOR
	R250	QRSA08J-333YN	RESISTOR
	R251	QRSA08J-472YN	RESISTOR
	R252	QRSA08J-472YN	RESISTOR
	R253	QRSA08J-335YN	RESISTOR
	R254	QRSA08J-335YN	RESISTOR
	R255	QRSA08J-272YN	RESISTOR
	R256	QRSA08J-473YN	RESISTOR
	R257	QRSA08J-103YN	RESISTOR
	R258	QRSA08J-682YN	RESISTOR
	R259	QRSA08J-393YN	RESISTOR
	R260	QRD161J-101	RESISTOR
	R263	QRSA08J-103YN	RESISTOR
	R264	QRSA08J-473YN	RESISTOR
	R266	QRSA08J-393YN	RESISTOR
	R269	QRSA08J-473YN	RESISTOR
	R270	QRSA08J-473YN	RESISTOR
	R271	QRSA08J-222YN	RESISTOR
	R272	QRSA08J-472YN	RESISTOR
	R273	QRSA08J-103YN	RESISTOR
	R274	QRSA08J-103YN	RESISTOR
	R275	QRSA08J-223YN	RESISTOR
	R276	QRSA08J-223YN	RESISTOR
	R277	QRSA08J-333YN	RESISTOR
	R278	QRSA08J-333YN	RESISTOR
	R279	QRSA08J-103YN	RESISTOR
	R280	QRSA08J-102YN	RESISTOR
	R281	QRSA08J-103YN	RESISTOR
	R282	QRSA08J-102YN	RESISTOR
	R283	QRSA08J-333YN	RESISTOR
	R285	QRSA08J-222YN	RESISTOR
	R286	QRSA08J-472YN	RESISTOR
	R287	QRSA08J-473YN	RESISTOR
	R288	QRSA08J-472YN	RESISTOR
	R289	QRSA08J-222YN	RESISTOR
	R290	QRSA08J-472YN	RESISTOR
	R291	QRSA08J-222YN	RESISTOR
	R292	QRSA08J-472YN	RESISTOR
	R293	QRSA08J-103YN	RESISTOR
	R294	QRSA08J-222YN	RESISTOR
	R295	QRSA08J-103YN	RESISTOR
	R296	QRSA08J-223YN	RESISTOR
	R297	QRSA08J-472YN	RESISTOR
	R298	QRSA08J-103YN	RESISTOR
	R299	QRSA08J-223YN	RESISTOR
	R300	QRSA08J-472YN	RESISTOR
	R302	QRSA08J-473YN	RESISTOR
	R303	QRSA08J-473YN	RESISTOR
	R304	QRSA08J-103YN	RESISTOR
	R305	QRSA08J-562YN	RESISTOR
	R306	QRSA08J-223YN	RESISTOR
	R307	QRSA08J-472YN	RESISTOR
	R309	QRSA08J-472YN	RESISTOR
	R310	QRSA08J-392YN	RESISTOR
	R311	QRSA08J-472YN	RESISTOR
	R313	QRSA08J-472YN	RESISTOR
	R314	QRSA08J-392YN	RESISTOR
	R315	QRSA08J-222YN	RESISTOR
	R316	QRSA08J-103YN	RESISTOR
	R317	QRSA08J-103YN	RESISTOR
	R318	QRSA08J-103YN	RESISTOR
	R319	QRSA08J-103YN	RESISTOR
	R320	QRSA08J-103YN	RESISTOR
	R321	QRSA08J-103YN	RESISTOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R322	QRSA08J-103YN	RESISTOR
	R323	QVPC402-224	V RESISTOR
	R324	QVPC402-224	V RESISTOR
	R325	QRSA08J-223YN	RESISTOR
	R326	QRSA08J-223YN	RESISTOR
	R327	QRSA08J-103YN	RESISTOR
	R328	QRSA08J-103YN	RESISTOR
	R329	QRSA08J-103YN	RESISTOR
	R330	QRSA08J-223YN	RESISTOR
	R331	QRSA08J-103YN	RESISTOR
	R332	QRSA08J-223YN	RESISTOR
	R333	QRSA08J-223YN	RESISTOR
	R334	QRSA08J-103YN	RESISTOR
	R335	QRSA08J-103YN	RESISTOR
	R336	QRSA08J-103YN	RESISTOR
	R337	QRSA08J-223YN	RESISTOR
	R338	QRSA08J-103YN	RESISTOR
	R339	QRSA08J-473YN	RESISTOR
	R355	QRSA08J-822YN	RESISTOR
	R356	QRSA08J-105YN	RESISTOR
	R357	QRSA08J-472YN	RESISTOR
	R359	QRSA08J-103YN	RESISTOR
	R360	QRSA08J-332YN	RESISTOR
	R361	QRSA08J-103YN	RESISTOR
	R362	QRSA08J-332YN	RESISTOR
	R363	QRSA08J-102YN	RESISTOR
	R364	QRSA08J-102YN	RESISTOR
	R366	QRSA08J-472YN	RESISTOR
	R501	QRSA08J-223YN	RESISTOR
	R502	QRSA08J-223YN	RESISTOR
	C1	QER41CM-106	E CAPACITOR
	C2	QER41CM-106	E CAPACITOR
	C3	QER41CM-106	E CAPACITOR
	C4	QER41CM-106	E CAPACITOR
	C5	QER41EM-475	E CAPACITOR
	C7	QEPA1CM-475	NP E CAPACITOR
	C8	QER41EM-475	E CAPACITOR
	C10	QEPA1CM-475	NP E CAPACITOR
	C11	QEK41AM-107	E CAPACITOR
	C12	QCYA1HK-102	CAPACITOR
	C13	QCYA1HK-102	CAPACITOR
	C14	QER41CM-106	E CAPACITOR
	C15	QER41CM-106	E CAPACITOR
	C16	QER41EM-475	E CAPACITOR
	C19	QER40JM-226	E CAPACITOR
	C20	QER41CM-106	E CAPACITOR
	C21	QEPA1CM-475	NP E CAPACITOR
	C22	QER41HM-105	E CAPACITOR
	C23	QCYA1HK-103	CAPACITOR
	C24	QEF81AM-106	TANTAL CAPACITOR
	C25	QCYA1HK-102	CAPACITOR
	C26	QER40JM-476	E CAPACITOR
	C27	QER40JM-476	E CAPACITOR
	C28	QEF81AM-475	TANTAL CAPACITOR
	C29	QER41CM-106	E CAPACITOR
	C30	QEK41AM-107	E CAPACITOR
	C31	QEK41AM-107	E CAPACITOR
	C32	QER40JM-476	E CAPACITOR
	C33	QEF81AM-155	E CAPACITOR
	C34	QCY81EK-823	CAPACITOR
	C35	QER40JM-476	E CAPACITOR
	C36	QER41AM-226	E CAPACITOR
	C37	QCSA1HJ-471	CAPACITOR
	C38	QER41AM-226	E CAPACITOR
	C39	QER41EM-475	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C41	QER41EM-475	E CAPACITOR
	C42	QCYA1HK-182	CAPACITOR
	C43	QEK41AM-107	E CAPACITOR
	C44	QER41HM-474	E CAPACITOR
	C45	QCYA1HK-103	CAPACITOR
	C46	QCYA1HK-562	CAPACITOR
	C48	QER41EM-475	E CAPACITOR
	C51	QER40JM-226	E CAPACITOR
	C52	QER41CM-106	E CAPACITOR
	C53	QEPA1CM-475	NP E CAPACITOR
	C54	QEF81AM-106	TANTAL CAPACITOR
	C55	QCYA1HK-102	CAPACITOR
	C56	QER40JM-476	E CAPACITOR
	C57	QER40JM-476	E CAPACITOR
	C58	QEF81AM-475	TANTAL CAPACITOR
	C59	QCSA1HJ-471	CAPACITOR
	C60	QEK41AM-107	E CAPACITOR
	C61	QEK41AM-107	E CAPACITOR
	C62	QER40JM-476	E CAPACITOR
	C63	QEF81AM-155	E CAPACITOR
	C64	QCY81EK-823	CAPACITOR
	C65	QER40JM-476	E CAPACITOR
	C66	QER41AM-226	E CAPACITOR
	C67	QER41HM-105	E CAPACITOR
	C68	QER41AM-226	E CAPACITOR
	C69	QER41EM-475	E CAPACITOR
	C71	QER41EM-475	E CAPACITOR
	C72	QCYA1HK-182	CAPACITOR
	C73	QEK41AM-107	E CAPACITOR
	C74	QER41HM-474	E CAPACITOR
	C75	QCYA1HK-103	CAPACITOR
	C76	QCYA1HK-562	CAPACITOR
	C78	QCYA1HK-182	CAPACITOR
	C79	QCYA1HK-102	CAPACITOR
	C81	QER41HM-104	E CAPACITOR
	C82	QER41HM-104	E CAPACITOR
	C85	QEK41AM-107	E CAPACITOR
	C89	QER41EM-475	E CAPACITOR
	C90	QER41EM-475	E CAPACITOR
	C91	QEK41AM-227	E CAPACITOR
	C92	QER40JM-107	E CAPACITOR
	C93	QEK41AM-107	E CAPACITOR
	C94	QEPA1AM-106	NP
	C95	QEPA1AM-106	NP
	C97	QER41CM-106	E CAPACITOR
	C99	QER41CM-106	E CAPACITOR
	C100	QEPA1AM-106	NP
	C101	QER41AM-106	E CAPACITOR
	C103	QEPA1AM-106	NP
	C104	QCSA1HJ-221	CAPACITOR
	C105	QCSA1HJ-221	CAPACITOR
	C106	QFN41HJ-223	M CAPACITOR
	C107	QCYA1HK-222	CAPACITOR
	C108	QCYA1HK-222	CAPACITOR
	C109	QCYA1HK-682	CAPACITOR
	C110	QFN41HJ-223	M CAPACITOR
	C149	QCSA1HJ-101	CAPACITOR
	C150	QCYA1HK-223	CAPACITOR
	C151	QCYA1HK-472	CAPACITOR
	C152	QER41CM-106	E CAPACITOR
	C153	QER40GM-227	E CAPACITOR
	C154	QER40GM-227	E CAPACITOR
	C155	QCYA1HK-222	CAPACITOR
	C156	QER41CM-106	E CAPACITOR
	C157	QCYA1HK-103	CAPACITOR
	C158	QER40JM-107	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C159	QCSA1HJ-101	CAPACITOR
	C160	QCYA1HK-223	CAPACITOR
	C161	QCYA1HK-472	CAPACITOR
	C162	QER41CM-106	E CAPACITOR
	C163	QCYA1HK-222	CAPACITOR
	C164	QER41CM-106	E CAPACITOR
	C165	QER40JM-107	E CAPACITOR
	C167	QCYA1HK-102	CAPACITOR
	C168	QCYA1HK-223	CAPACITOR
	C169	QCYA1HK-223	CAPACITOR
	C170	QCYA1HK-102	CAPACITOR
	C171	QCYA1HK-182	CAPACITOR
	C172	QCYA1HK-103	CAPACITOR
	C173	QEE41AM-156	TANTAL CAPACITOR
	C175	QER41EM-475	E CAPACITOR
	C178	QEPA1CM-475	NP E CAPACITOR
	C179	QCYA1HK-103	CAPACITOR
	C180	QCYA1HK-821	CAPACITOR
	C181	QER41EM-475	E CAPACITOR
	C182	QER41AM-336	E CAPACITOR
	C183	QEK41AM-107	E CAPACITOR
	C184	QEPA1CM-475	NP E CAPACITOR
	C185	QER41EM-475	E CAPACITOR
	C186	QER41EM-475	E CAPACITOR
	C187	QER41EM-475	E CAPACITOR
	C190	QER41EM-475	E CAPACITOR
	C191	QEK41AM-107	E CAPACITOR
	C192	QER41EM-475	E CAPACITOR
	C193	QER41EM-475	E CAPACITOR
	C195	QER41AM-106	E CAPACITOR
	C197	QER41AM-106	E CAPACITOR
	C198	QER41CM-106	E CAPACITOR
	C199	QER41AM-106	E CAPACITOR
	C200	QER41CM-106	E CAPACITOR
	C202	QEK41AM-227	E CAPACITOR
	C203	QEK41AM-107	E CAPACITOR
	C204	QFN41HJ-223	M CAPACITOR
	C205	QCYA1HK-102	CAPACITOR
	C206	QCYA1HK-223	CAPACITOR
	C207	QCYA1HK-102	CAPACITOR
	C208	QER41CM-226	E CAPACITOR
	C209	QEK41CM-107	E CAPACITOR
	C210	QER41CM-226	E CAPACITOR
	C211	QER41HM-104	E CAPACITOR
	C215	QER41EM-475	E CAPACITOR
	C216	QEPA1CM-475	NP E CAPACITOR
	C217	QER41AM-106	E CAPACITOR
	C218	QEPA1CM-475	NP E CAPACITOR
	C219	QER41AM-106	E CAPACITOR
	C220	QER41AM-106	E CAPACITOR
	C221	QER41AM-106	E CAPACITOR
	C222	QER41EM-475	E CAPACITOR
	C223	QCYA1HK-223	CAPACITOR
	C224	QER41EM-475	E CAPACITOR
	C225	QEPA1CM-475	NP E CAPACITOR
	C226	QFN41HJ-223	M CAPACITOR
	C227	QEPA1CM-475	NP E CAPACITOR
	C228	QEK41AM-107	E CAPACITOR
	C229	QER41EM-475	E CAPACITOR
	C230	QER41EM-475	E CAPACITOR
	C231	QER41EM-335	E CAPACITOR
	C232	QER41EM-335	E CAPACITOR
	C233	QCSA1HJ-101	CAPACITOR
	C234	QCSA1HJ-101	CAPACITOR
	C235	QER41CM-106	E CAPACITOR
	C236	QCYA1HK-103	CAPACITOR
	C237	QER41EM-475	E CAPACITOR
	C238	QER40JM-336	E CAPACITOR
	C239	QER41CM-106	E CAPACITOR
	C240	QER40JM-336	E CAPACITOR
	C241	QER41CM-106	E CAPACITOR
	C242	QER41HM-104	E CAPACITOR
	C243	QER41CM-106	E CAPACITOR
	C244	QER41HM-474	E CAPACITOR
	C245	QER41CM-106	E CAPACITOR
	C246	QER41HM-474	E CAPACITOR
	C247	QER41HM-104	E CAPACITOR
	C248	QER41AM-106	E CAPACITOR
	C249	QER41HM-474	E CAPACITOR
	C250	QER41HM-104	E CAPACITOR
	C251	QCYA1HJ-333	CAPACITOR
	C252	QCYA1HJ-333	CAPACITOR
	C253	QER41CM-106	E CAPACITOR
	C254	QER40JM-226	E CAPACITOR
	C255	QCYA1HK-103	CAPACITOR
	C256	QCYA1HK-103	CAPACITOR
	C257	QER41CM-106	E CAPACITOR
	C258	QER41CM-106	E CAPACITOR
	C268	QER41EM-475	E CAPACITOR
	C269	QEE41EK-105	T CAPACITOR
	L1	PGZ00700-472J	COIL
	L3	PGZ00700-472J	COIL
⚠	L5	PU52600	OSC COIL
	L6	PGZ00638-391J	COIL
	L10	PGZ00637-101K	COIL
	L11	PGZ00639-182J	COIL
	L12	PGZ00637-101K	COIL
	L13	PGZ00639-182J	COIL
	L14	PGZ00638-102K	COIL
	L16	PGZ00638-221K	COIL
	L17	PGZ00637-101K	COIL
	LPF1	PGZ00632	LOW PASS FILTER
	LPF2	PGZ00632	LOW PASS FILTER
	BPF1	PGZ00949	BAND PASS FILTER
	BPF2	PGZ00950	BAND PASS FILTER
	RY1	PGZ00631	RELAY
	TP1	PU54983	TEST PIN, X26
	SLD1	PGD40841-01-01	SHIELD CASE
	SLD2	PGD40842-01-01	SHIELD CAP
	CN1	PU58844-10R	CAP HOUSING
	CN2	PU58844-7R	CAP HOUSING
	CN3	PU58844-3R	CAP HOUSING
	CN4	PU58844-3	CAP HOUSING
	CN5	PU58844-4	CAP HOUSING
	CN6	PU58844-10Y	CAP HOUSING
	CN7	PU58844-7	CAP HOUSING
	CN8	PU58844-4Y	CAP HOUSING
	CN9	PU58844-2	CAP HOUSING
	CN10	PU58844-8	CAP HOUSING
	CN11	PU58844-5R	CAP HOUSING
	CN12	PU58844-6	CAP HOUSING
	CN13	PU58844-10	CAP HOUSING
	CN14	PGZ00724-11	CONNECTOR
	CN15	PGZ00724-10	CONNECTOR

-FM SUB BOARD ASSY <05>-

(This board is not included in the AUDIO board ass'y.)

	PWBA	PRK30006A-02	FM SUB BOARD ASSY

[0][5]

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC11	AN6299NC	IC
	IC20	M5236L	IC
	IC21	NJM4556MB	IC
	IC22	NJM4556MB	IC
	IC23	NJM4556MB	IC
	Q32	DTC124EK	TRANSISTOR
	Q42	2SB793AR	TRANSISTOR
	Q64	DTC124EK	TRANSISTOR
	Q84	DTC124EK	TRANSISTOR
	Q105	FMA1	TRANSISTOR
	Q106	IMH7	TRANSISTOR
	Q107	IMH7	TRANSISTOR
	Q108	2SD601	TRANSISTOR
	Q109	2SD601	TRANSISTOR
	D30	DA204K	DIODE
	D31	DA204K	DIODE
	R106	QRSA08J-221YN	RESISTOR
	R107	QRSA08J-153YN	RESISTOR
	R113	QRSA08J-392YN	RESISTOR
	R114	QRSA08J-273YN	RESISTOR
	R115	QRSA08J-394YN	RESISTOR
	R131	QRSA08J-821YN	RESISTOR
	R132	QRSA08J-682YN	RESISTOR
	R133	QRSA08J-182YN	RESISTOR
	R134	QRSA08J-392YN	RESISTOR
	R135	QRSA08J-181YN	RESISTOR
	R136	QRSA08J-123YN	RESISTOR
	R137	QRSA08J-392YN	RESISTOR
	R138	QRSA08J-123YN	RESISTOR
	R139	QRSA08J-473YN	RESISTOR
	R140	QRSA08J-153YN	RESISTOR
	R141	QRSA08J-821YN	RESISTOR
	R142	QRSA08J-682YN	RESISTOR
	R143	QRSA08J-182YN	RESISTOR
	R144	QRSA08J-392YN	RESISTOR
	R145	QRSA08J-181YN	RESISTOR
	R146	QRSA08J-392YN	RESISTOR
	R147	QRSA08J-123YN	RESISTOR
	R148	QRSA08J-123YN	RESISTOR
	R149	QRSA08J-473YN	RESISTOR
	R150	QRSA08J-153YN	RESISTOR
	R222	QRSA08J-473YN	RESISTOR
	R261	QRSA08J-104YN	RESISTOR
	R262	QRSA08J-103YN	RESISTOR
	R267	QRSA08J-103YN	RESISTOR
	R268	QRSA08J-104YN	RESISTOR
	R340	QRSA08J-272YN	RESISTOR
	R341	QRSA08J-472YN	RESISTOR
	R342	QRSA08J-272YN	RESISTOR
	R343	QRSA08J-472YN	RESISTOR
	R344	QRSA08J-103YN	RESISTOR
	R345	QRSA08J-103YN	RESISTOR
	R346	QRSA08J-222YN	RESISTOR
	R347	QRSA08J-104YN	RESISTOR
	R348	QRSA08J-103YN	RESISTOR
	R349	QRSA08J-103YN	RESISTOR
	R350	QRSA08J-103YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R351	QRSA08J-103YN	RESISTOR
	R352	QRSA08J-103YN	RESISTOR
	R353	QRSA08J-103YN	RESISTOR
	R367	ERT-D2FGL301S	THERMISTOR
	R368	QRSA08J-102YN	RESISTOR
	R369	ERT-D2FGL301S	THERMISTOR
	R370	QRSA08J-102YN	RESISTOR
	R371	QRD167J-821	RESISTOR
	R503	QRSA08J-222YN	RESISTOR
	R504	QRSA08J-821YN	RESISTOR
	R505	QRSA08J-104YN	RESISTOR
	R506	QRSA08J-561YN	RESISTOR
	R507	QRSA08J-821YN	RESISTOR
	R508	QRSA08J-561YN	RESISTOR
	R509	QRSA08J-392YN	RESISTOR
	R510	QRSA08J-122YN	RESISTOR
	R511	QRSA08J-683YN	RESISTOR
	R512	QRSA08J-103YN	RESISTOR
	R513	QRSA08J-103YN	RESISTOR
	R514	QRSA08J-392YN	RESISTOR
	R515	QRSA08J-122YN	RESISTOR
	R516	QRSA08J-102YN	RESISTOR
	R517	QRSA08J-392YN	RESISTOR
	R518	QRSA08J-122YN	RESISTOR
	R519	QRSA08J-683YN	RESISTOR
	R520	QRSA08J-103YN	RESISTOR
	R521	QRSA08J-103YN	RESISTOR
	R522	QRSA08J-392YN	RESISTOR
	R523	QRSA08J-122YN	RESISTOR
	R524	QRSA08J-102YN	RESISTOR
	R525	QRSA08J-103YN	RESISTOR
	C111	QER41HM-225	E CAPACITOR
	C112	QCYA1HK-183	CAPACITOR
	C113	QCYA1HK-153	CAPACITOR
	C114	QER40JM-226	E CAPACITOR
	C115	QER40JM-226	E CAPACITOR
	C116	QCSA1HJ-151	CAPACITOR
	C117	QCYA1HK-103	CAPACITOR
	C118	QCYA1HK-821	CAPACITOR
	C119	QCYA1HK-152	CAPACITOR
	C120	QCYA1HK-821	CAPACITOR
	C121	QEPA1CM-475	NP E CAPACITOR
	C123	QER40JM-226	E CAPACITOR
	C124	QER41HM-105	E CAPACITOR
	C126	QER41EM-475	E CAPACITOR
	C127	QCYA1HK-153	CAPACITOR
	C128	QER41AM-336	E CAPACITOR
	C129	QER41AM-336	E CAPACITOR
	C130	QER41HM-225	E CAPACITOR
	C131	QCYA1HK-183	CAPACITOR
	C132	QCYA1HK-153	CAPACITOR
	C133	QER40JM-226	E CAPACITOR
	C134	QCSA1HJ-151	CAPACITOR
	C135	QCYA1HK-103	CAPACITOR
	C136	QCSA1HJ-821	CAPACITOR
	C137	QCYA1HK-152	CAPACITOR
	C138	QCSA1HJ-821	CAPACITOR
	C139	QEPA1CM-475	NP E CAPACITOR
	C141	QER40JM-226	E CAPACITOR
	C142	QER41HM-105	E CAPACITOR
	C144	QER41CM-106	E CAPACITOR
	C145	QCYA1HK-153	CAPACITOR
	C146	QER41AM-336	E CAPACITOR
	C147	QER41AM-336	E CAPACITOR
	C148	QER40JM-107	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C188	QEPA1CM-475	NP E CAPACITOR
	C189	QEPA1CM-475	NP E CAPACITOR
	C194	QER41HM-474	E CAPACITOR
	C201	QER41HM-105	E CAPACITOR
	C212	QEK41AM-227	E CAPACITOR
	C214	QER40JM-226	E CAPACITOR
	C259	QER41CM-106	E CAPACITOR
	C260	QER41CM-106	E CAPACITOR
	C261	QER41CM-106	E CAPACITOR
	C262	QER41CM-106	E CAPACITOR
	C263	QER41CM-106	E CAPACITOR
	C264	QER41CM-106	E CAPACITOR
	C265	QER41CM-106	E CAPACITOR
	C266	QER41CM-106	E CAPACITOR
	C267	QER41CM-106	E CAPACITOR
	C269	QCYA1HJ-153	CAPACITOR
	C270	QCYA1HJ-153	CAPACITOR
	C271	QCYA1HJ-153	CAPACITOR
	C272	QCYA1HJ-153	CAPACITOR
	L7	PGZ00638-152	COIL
	L8	PGZ00638-152	COIL
	SW1	PU54440	SWITCH
	CN16	PGZ00723-11	CONNECTOR
	CN17	PGZ00723-10	CONNECTOR
	CN18	PU58844-102	CAP HOUSING

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* 6.2.6 FM A PREAMP BOARD ASSY 06 *

	PWBA	PGE30099B	FM A PRE AMP BOARD ASSEMBLY
	IC1	HA11752MP	IC
	Q1	2SC2412K	TRANSISTOR
	Q2	2SC2412K	TRANSISTOR
	Q3	2SD1328S,T	TRANSISTOR
	Q4	FMW3	TRANSISTOR
	R1	QRSA08J-472YN	RESISTOR
	R2	QRSA08J-223YN	RESISTOR
	R3	QRSA08J-272YN	RESISTOR
	R4	QRSA08J-561YN	RESISTOR
	R5	QRSA08J-561YN	RESISTOR
	R6	QRSA08J-472YN	RESISTOR
	R7	QRSA08J-272YN	RESISTOR
	R8	QRSA08J-223YN	RESISTOR
	R9	QRSA08J-224YN	RESISTOR
	R10	QRSA08J-561YN	RESISTOR
	R11	QRSA08J-223YN	RESISTOR
	R12	QRSA08J-681YN	RESISTOR
	R13	QRSA08J-102YN	RESISTOR
	R14	QRSA08J-681YN	RESISTOR
	R15	QRSA08J-223YN	RESISTOR
	R16	QRSA08J-681YN	RESISTOR
	R17	QRSA08J-392YN	RESISTOR
	R18	QRSA08J-392YN	RESISTOR
	R19	QRSA08J-100YN	RESISTOR
	R20	QRSA08J-100YN	RESISTOR
	R21	QRSA08J-271YN	RESISTOR
	C1	QER40JM-107	E CAPACITOR
	C2	QCYA1HK-103	CAPACITOR
	C3	QCSA1HJ-220	CAPACITOR
	C4	QCYA1HK-102	CAPACITOR
	C5	QCYA1HK-102	CAPACITOR
	C6	QCYA1HK-103	CAPACITOR
	C7	QCYA1HK-223	CAPACITOR
	C8	QCYA1HK-103	CAPACITOR
	C9	QER40JM-107	E CAPACITOR
	C10	QCSA1HJ-221	CAPACITOR
	C11	QCSA1HJ-561	CAPACITOR
	C12	QER41HM-224	E CAPACITOR
	C13	QCYA1HK-223	CAPACITOR
	C14	QCYA1HK-223	CAPACITOR
	C15	QCSA1HJ-221	CAPACITOR
	C16	QCSA1HJ-561	CAPACITOR
	C17	QCYA1HK-223	CAPACITOR
	C18	QCSA1HJ-331	CAPACITOR
	C19	QCSA1HJ-820	CAPACITOR
	C20	QER40JM-107	E CAPACITOR
	C21	QCYA1HK-103	CAPACITOR
	C22	QCYA1HK-103	CAPACITOR
	C23	QCYA1HK-103	CAPACITOR
	C24	QCYA1HK-223	CAPACITOR
	L1	PGZ00638-101	COIL
	L2	PGZ00638-101	COIL
	L3	PGZ00638-101	COIL
	L4	PGZ00637-221	COIL
	SLD1	PGD40845-01-01	SHIELD CASE
	TP1	PU56008	TEST PIN
	TP2	PU56008	TEST PIN
	CN2	PGZ00624	CONNECTOR

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* 6.2.7 REGULATOR BOARD ASSY 07 *

	PWBA	PGE30158A	REGURATOR BOARD ASSEMBLY
	Q1	2SC1545A,B	TRANSISTOR
	Q2	2SC1545A,B	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS99	DIODE
	R1	QRD167J-104	RESISTOR
	R2	QRD167J-104	RESISTOR
	R3	QRD167J-104	RESISTOR
	R4	QRD167J-104	RESISTOR
	C1	QEU41CM-337	E CAPACITOR
	C2	QEU41CM-107	E CAPACITOR
	C3	PU57601-226KC	OS CAPACITOR
	C4	PU57601-226KC	OS CAPACITOR
	C5	PU57601-226KC	OS CAPACITOR
	C6	PU57601-226KC	OS CAPACITOR
⚠	DD1	PGZ00938A	DC-DC CONVERTER
⚠	RY1	PU56400-2	RELAY

07 08

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	TP1	PU56008	TEST POINT, X5(TP1-5)
	CN1	PU43351-104	CAP HOUSING
	CN2	PU58844-9	CAP HOUSING
	CN3	PU58844-105	CAP HOUSING
	CN4	PU58844-104	CAP HOUSING
	CN5	PU58844-105R	CAP HOUSING
	CN6	PU43351-4	CAP HOUSING
⚠	CP1	ICP-F38	CIRCUIT PROTECTOR
⚠	CP2	ICP-F38	CIRCUIT PROTECTOR
⚠	CP3	ICP-F10	CIRCUIT PROTECTOR

6.2.8 SYSCON BOARD ASSY 08

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PGE20209A-03	SYSCON BOARD ASSEMBLY
	IC1	TC40H166F	IC
	IC2	TC40H166F	IC
	IC3	TC40H166F	IC
	IC4	TC40H166F	IC
	IC5	IR3702N1	IC
	IC6	14VT08A	IC
	IC7	NJM2903M	IC
⚠	IC8	PGD30410-G03-03	IC
		OR HD6301Y0RJ67P	IC
	IC9	TC4584BF	IC
⚠	IC10	UPD7564G-505	IC
	IC11	TC4528BF	IC
	IC12	M51953AL	IC
	IC13	TC4526BF	IC
	IC14	TC4526BF	IC
	IC15	TC4094BF	IC
	IC16	BA6109U3	IC
⚠	IC17	S-81250HG	IC
	IC18	TC4050BF	IC
	IC19	TC4094BF	IC
	IC20	TC4050BF	IC
	IC21	M51946AL	IC
	Q1	DTC124ES	TRANSISTOR
	Q2	DTC124ES	TRANSISTOR
	Q3	DTC124ES	TRANSISTOR
	Q4	DTC124ES	TRANSISTOR
	Q5	DTC124ES	TRANSISTOR
	Q6	DTA124ES	TRANSISTOR
	Q7	DTC124ES	TRANSISTOR
	Q8	DTC124ES	TRANSISTOR
	Q9	DTA124ES	TRANSISTOR
	Q10	DTC124ES	TRANSISTOR
	Q11	DTA124ES	TRANSISTOR
	Q12	DTA144ES	TRANSISTOR
	Q13	DTA144ES	TRANSISTOR
	Q14	DTC124ES	TRANSISTOR
	Q15	DTC124ES	TRANSISTOR
	Q16	DTC124ES	TRANSISTOR
	Q17	DTC124ES	TRANSISTOR
	Q18	DTC124ES	TRANSISTOR
	Q19	DTC124ES	TRANSISTOR
	Q20	DTC124ES	TRANSISTOR
	Q21	DTC124ES	TRANSISTOR
	Q22	DTC124ES	TRANSISTOR
	Q23	DTC124ES	TRANSISTOR
	Q24	DTC124ES	TRANSISTOR
	Q25	DTC124ES	TRANSISTOR
	Q26	DTC124ES	TRANSISTOR
	Q27	DTC124ES	TRANSISTOR
	Q28	DTC124ES	TRANSISTOR
	Q29	DTC124ES	TRANSISTOR
	Q30	DTC124ES	TRANSISTOR
	Q31	DTC124ES	TRANSISTOR
	Q32	DTC124ES	TRANSISTOR
	Q33	2SD636R	TRANSISTOR
⚠	Q34	DTA114EF	TRANSISTOR
	Q35	DTC124ES	TRANSISTOR
	Q36	DTA124ES	TRANSISTOR
	Q37	DTC124ES	TRANSISTOR
	Q38	DTC124ES	TRANSISTOR
	Q39	DTC144EF	TRANSISTOR
	Q40	DTA124ES	TRANSISTOR
	Q42	DTC124ES	TRANSISTOR
	Q43	DTA124ES	TRANSISTOR
	Q44	DTC124ES	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	RD9.1EB2	ZENER DIODE
	D4	RD5.1EB2	ZENER DIODE
	D5	1SS133	DIODE
	D6	RD12EB1	ZENER DIODE
	D7	RD9.1EB2	ZENER DIODE
	D8	1SS133	DIODE
	D9	HZ4BLL	ZENER DIODE
	LD1	GL-3HD6	LE DIODE
	LD2	GL-3HD6	LE DIODE
	LD3	GL-3HD6	LE DIODE
	LD4	GL-3HD6	LE DIODE
	LD5	GL-3HD6	LE DIODE
	LD6	GL-3HD6	LE DIODE
	LD7	GL-3HD6	LE DIODE
	D10	RD2.7EB1	ZENER DIODE
	D11	RD5.1EB1	ZENER DIODE
	D13	1SS133	DIODE
	D14	1SS133	DIODE
	D15	1SS133	DIODE
	D16	1SS133	DIODE
	R1	QRD167J-473	RESISTOR
	R2	QRD167J-473	RESISTOR
	R3	QRD167J-333	RESISTOR
	R4	QRD167J-333	RESISTOR
	R5	QRD167J-103	RESISTOR
	R6	QRD167J-103	RESISTOR
	R7	QRD167J-103	RESISTOR
	R8	QRD167J-103	RESISTOR
	R9	QRD167J-562	RESISTOR
	R10	QRD167J-562	RESISTOR
	R11	QRD167J-223	RESISTOR
	R12	QRD167J-223	RESISTOR
	R13	QRD167J-471	RESISTOR
	R14	QRD167J-102	RESISTOR
	R15	QRD167J-223	RESISTOR
	R16	QRD167J-223	RESISTOR
	R17	QRD167J-471	RESISTOR
	R18	QRD167J-102	RESISTOR
	R19	QRD167J-102	RESISTOR
	R20	QRD167J-102	RESISTOR
	R21	QRD167J-224	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R22	QRD167J-474	RESISTOR
	R23	QRD167J-104	RESISTOR
	R24	QRD167J-823	RESISTOR
	R25	QRD167J-221	RESISTOR
	R26	QRD167J-103	RESISTOR
	R27	QRD167J-333	RESISTOR
	R28	QRD167J-562	RESISTOR
	R29	QRD167J-682	RESISTOR
	R30	QRD167J-682	RESISTOR
	R31	QRD167J-221	RESISTOR
	R32	QRD167J-221	RESISTOR
	R33	QRD167J-101	RESISTOR
	R34	QRD167J-101	RESISTOR
	R35	QRD167J-333	RESISTOR
	R36	QRD167J-472	RESISTOR
	R37	QRD167J-333	RESISTOR
	R38	QRD167J-391	RESISTOR
	R40	QRD167J-104	RESISTOR
	R41	QRD167J-103	RESISTOR
	R42	QRD167J-103	RESISTOR
	R43	QRD167J-103	RESISTOR
	R44	QRD167J-103	RESISTOR
	R47	QRD167J-103	RESISTOR
	R48	QRD167J-103	RESISTOR
	R49	QRD167J-103	RESISTOR
	R50	QRD167J-103	RESISTOR
	R51	QRD167J-103	RESISTOR
	R52	QRD167J-103	RESISTOR
	R53	QRD167J-103	RESISTOR
	R54	QRD167J-103	RESISTOR
	R55	QRD167J-103	RESISTOR
	R56	QRD167J-103	RESISTOR
	R57	QRD167J-333	RESISTOR
	R58	QRD167J-103	RESISTOR
	R59	QRD167J-473	RESISTOR
	R60	QRD167J-473	RESISTOR
	R61	QRD167J-104	RESISTOR
	R62	QRD167J-152	RESISTOR
	R63	QRD167J-392	RESISTOR
	R64	QRD167J-103	RESISTOR
	R65	PU57457-473	V RESISTOR , BATT DOWN DETECT
	R66	QRD167J-103	RESISTOR
	R67	QRV147F-2742A	CMF RESISTOR
	R68	QRV147F-6810A	CMF RESISTOR
	R69	QRV147F-1002A	CMF RESISTOR
	R70	QRD167J-105	RESISTOR
	R71	QRD167J-105	RESISTOR
	R72	QRD167J-333	RESISTOR
	R73	QRD167J-333	RESISTOR
	R74	QRD167J-182	RESISTOR
	R75	QRD167J-182	RESISTOR
	R76	QRD167J-182	RESISTOR
	R77	QRD167J-182	RESISTOR
	R78	QRD167J-182	RESISTOR
	R79	QRD167J-182	RESISTOR
	R80	QRD167J-333	RESISTOR
	R81	QRD167J-333	RESISTOR
	R82	QRD167J-182	RESISTOR
	R83	QRD167J-182	RESISTOR
	R84	QRD167J-182	RESISTOR
	R85	QRD167J-182	RESISTOR
	R86	QRD167J-182	RESISTOR
	R87	QRD167J-182	RESISTOR
	R88	QRD167J-182	RESISTOR
	R89	QRD167J-102	RESISTOR
	R90	QRD167J-102	RESISTOR
	R91	QRD167J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R92	QRD167J-102	RESISTOR
	R93	QRD167J-102	RESISTOR
	R94	QRD167J-102	RESISTOR
	R95	QRD167J-102	RESISTOR
	R96	QRD167J-102	RESISTOR
	R97	QRD167J-102	RESISTOR
	R98	QRD167J-102	RESISTOR
	R99	QRD167J-102	RESISTOR
	R100	QRD167J-102	RESISTOR
	R101	QRD167J-102	RESISTOR
	R102	QRD167J-102	RESISTOR
	R103	QRD167J-102	RESISTOR
	R104	QRD167J-103	RESISTOR
	R105	QRD167J-391	RESISTOR
	R106	QRD167J-391	RESISTOR
	R107	QRD167J-102	RESISTOR
	R108	QRD167J-102	RESISTOR
	R109	QRD167J-102	RESISTOR
	R110	QRD167J-102	RESISTOR
	R111	QRD167J-102	RESISTOR
	R112	QRD167J-102	RESISTOR
	R113	QRD167J-102	RESISTOR
	R114	QRD167J-102	RESISTOR
	R115	QRD167J-102	RESISTOR
	R116	QRD167J-102	RESISTOR
	R117	QRD167J-333	RESISTOR
	R118	QRD167J-391	RESISTOR
	R119	QRD167J-154	RESISTOR
	R120	QRD167J-471	RESISTOR
	R121	QRD167J-391	RESISTOR
	R122	QRD167J-103	RESISTOR
	R123	QRD167J-333	RESISTOR
	R124	QRD167J-333	RESISTOR
	R125	QRD167J-103	RESISTOR
	R126	QRD167J-473	RESISTOR
	R129	QRD167J-562	RESISTOR
	R130	QRD167J-824	RESISTOR
	R131	QRD167J-474	RESISTOR
	R132	QRD161J-333	RESISTOR
	RA2	RGLD3X104J	RESISTOR ARRAY
	RA3	RGLD4X103J	RESISTOR ARRAY
	RA4	RGLD4X103J	RESISTOR ARRAY
	RA5	EXB-LD4103G	RESISTOR ARRAY
	C1	QFN41HJ-103	M CAPACITOR
	C2	QFN41HJ-103	M CAPACITOR
	C3	QFN41HJ-103	M CAPACITOR
	C4	QFN41HJ-103	M CAPACITOR
	C5	QER41CM-226	E CAPACITOR
	C6	QFN41HJ-103	M CAPACITOR
	C7	QCF11HP-103	CAPACITOR
	C8	QCF11HP-103	CAPACITOR
	C9	QCF11EZ-472	CAPACITOR
	C10	QFN41HJ-103	M CAPACITOR
	C11	QFN41HJ-103	M CAPACITOR
⚠	C12	QCS11HJ-220	CAPACITOR
⚠	C13	QCS11HJ-220	CAPACITOR
	C14	QEE41VM-224	TANTAL CAPACITOR
	C15	QEE41VM-474	TANTAL CAPACITOR
	C16	QFN41HJ-103	M CAPACITOR
	C17	QEPA1HM-105	NP E CAPACITOR
	C18	QFN41HJ-103	M CAPACITOR
	C19	PU58948-104	CAPACITOR
	C20	QER40JM-476	E CAPACITOR
	C21	QER41CM-476	E CAPACITOR
	C22	QER40JM-107	E CAPACITOR
	C23	QER41CM-476	E CAPACITOR

[0][8] [0][9] [1][0] [1][3]

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	C24	QCS11HJ-101	CAPACITOR
⚠	C25	QCS11HJ-101	CAPACITOR
	C26	QER41EM-475	E CAPACITOR
	C27	PU58948-104	CAPACITOR
	C28	PU58948-104	CAPACITOR
	C29	PU58948-104	CAPACITOR
⚠	CF1	PU49487-2	RESONATOR
⚠	X1	PGZ00580	CRYSTAL RESONATOR
	S1	PU53598	TACT SWITCH
	S2	PU53598	TACT SWITCH
	S3	PU53598	TACT SWITCH
	S4	PU53598	TACT SWITCH
	S5	PU53598	TACT SWITCH
	S6	PU53598	TACT SWITCH
	S7	PU53598	TACT SWITCH
	S8	PU53598	TACT SWITCH
	S9	PGZ00581	SLIDE SWITCH
⚠	TH1	PU52108-2R2	POSISTOR
	HD1	PU50634-3	LED HOLDER, X7
⚠	VA1	PU49624-2	VARISTOR
⚠	VA2	PU49624-2	VARISTOR
⚠	VA3	PU49624-2	VARISTOR
⚠	VA4	PU49624-2	VARISTOR
⚠	VA5	PU49624-2	VARISTOR
⚠	VA6	PU49624-2	VARISTOR
⚠	VA7	PU49624-2	VARISTOR
	VA8	PU49624-2	VARISTOR
	TP1	PU56008	TEST PIN
	TP2	PU56008	TEST PIN
	TP3	PU56008	TEST PIN
	TP4	PU45908-3	TEST PIN
	CN1	PU58844-11R	CAP HOUSING
	CN2	PU58844-10Y	CAP HOUSING
	CN3	PU58844-111Y	CAP HOUSING
	CN4	PU58844-110	CAP HOUSING
	CN5	PU58844-104	CAP HOUSING
	CN6	PU58844-102R	CAP HOUSING
	CN7	PU58844-3R	CAP HOUSING
	CN8	PU58844-3	CAP HOUSING
	CN9	PU54537-2	CAP HOUSING
	CN10	PU54537-2	CAP HOUSING
	CN11	PU58844-102Y	CAP HOUSING
	CN12	PU58844-102	CAP HOUSING
	CN13	PU58844-2	CAP HOUSING
	CN14	PU58844-2	CAP HOUSING
	CN15	PU58844-11	CAP HOUSING
	CN17	PU58844-113	CAP HOUSING
	CN18	PU58844-109	CAP HOUSING
	CN19	PU58844-102	CAP HOUSING
	CN20	PU58844-2	CAP HOUSING
	CN22	PU58844-2R	CAP HOUSING
⚠	CP1	ICP-F15	CIRCUIT PROTECTOR
⚠	CP2	ICP-F15	CIRCUIT PROTECTOR

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6.2.9 ERASE BOARD ASSY [0][9]

	PWBA	PGE40238A	ERASE BOARD ASSY
	IC1	3VT01	IC
	Q1	2SD973AR	TRANSISTOR
	Q2	2SD639S	TRANSISTOR
	Q3	2SD639S	TRANSISTOR
	D1	RD9.1EB2	ZENER DIODE
	R1	QRD167J-152	RESISTOR
	R2	QRD167J-104	RESISTOR
	R3	QRD167J-104	RESISTOR
	R4	QRD167J-121	RESISTOR
	R5	QRD167J-121	RESISTOR
	C1	QFN41HJ-393	M CAPACITOR
	C2	QCF11HP-103	CAPACITOR
	C3	QCS11HJ-820	CAPACITOR
	C4	QCS11HJ-820	CAPACITOR
	C5	QCS11HJ-560	CAPACITOR
	C7	QCF11HP-103	CAPACITOR
	C8	QCT05CH-560	CAPACITOR
	L1	PU59152-220J	PEAKING COIL
	L3	PU56175	STEP UP TRANS
	SLD1	PGD40933	SHIELD CASE(1)
	SLD2	PGD40934	SHIELD CASE(2)
	SPC1	PGD40935	SPACER
	CN1	PU58844-102	CAP HOUSING
	CN2	PU58844-3	CAP HOUSING
	CN3	PU58844-102R	CAP HOUSING
	CN4	PU58844-103R	CAP HOUSING

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6.2.10 FULL ERASE HEAD BOARD [1][0]

	PWB	PGE40185	FE HEAD BOARD

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6.2.11 XLR BOARD ASSY [1][3]

	PWBA	PRK20029A-01	XLR BOARD ASSY
	IC1	NJM2068MD	IC
	IC2	NJM2068MD	IC
	IC3	NJM4556MB	IC
	IC4	NJM4556MB	IC
	IC5	NJM5532D-D	IC
	IC6	NJM5532D-D	IC
	Q1	DTC114EF	TRANSISTOR
	Q2	2SD639R,S	TRANSISTOR
	Q3	2SD639R,S	TRANSISTOR
	Q4	2SD639R,S	TRANSISTOR
	Q5	2SD639R,S	TRANSISTOR
	Q6	2SB709(R)	TRANSISTOR
	Q7	2SB709(R)	TRANSISTOR
	Q8	2SD601(R)	TRANSISTOR
	D1	DA204K	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R1	QRSA08J-272YN	RESISTOR
	R2	QRSA08J-222YN	RESISTOR
	R3	QRSA08J-681YN	RESISTOR
	R4	QRSA08J-222YN	RESISTOR
	R5	QRSA08J-272YN	RESISTOR
	R6	QRSA08J-472YN	RESISTOR
	R7	QRSA08J-223YN	RESISTOR
	R8	QRSA08J-223YN	RESISTOR
	R9	QRSA08J-473YN	RESISTOR
	R10	QRSA08J-473YN	RESISTOR
	R11	QRSA08J-103YN	RESISTOR
	R12	QRSA08J-103YN	RESISTOR
	R13	QRSA08J-101YN	RESISTOR
	R14	QRSA08J-392YN	RESISTOR
	R15	QRSA08J-334YN	RESISTOR
	R16	QRSA08J-154YN	RESISTOR
	R18	QRSA08J-472YN	RESISTOR
	R19	QRSA08J-472YN	RESISTOR
	R20	QRSA08J-473YN	RESISTOR
	R21	QRSA08J-473YN	RESISTOR
	R22	QRSA08J-104YN	RESISTOR
	R23	QRSA08J-104YN	RESISTOR
	R24	QRSA08J-104YN	RESISTOR
	R25	QRSA08J-104YN	RESISTOR
	R26	QRSA08J-272YN	RESISTOR
	R27	QRSA08J-222YN	RESISTOR
	R28	QRSA08J-681YN	RESISTOR
	R29	QRSA08J-222YN	RESISTOR
	R30	QRSA08J-272YN	RESISTOR
	R31	QRSA08J-472YN	RESISTOR
	R32	QRSA08J-223YN	RESISTOR
	R33	QRSA08J-223YN	RESISTOR
	R34	QRSA08J-473YN	RESISTOR
	R35	QRSA08J-473YN	RESISTOR
	R36	QRSA08J-103YN	RESISTOR
	R37	QRSA08J-103YN	RESISTOR
	R38	QRSA08J-101YN	RESISTOR
	R39	QRSA08J-392YN	RESISTOR
	R40	QRSA08J-334YN	RESISTOR
	R41	QRSA08J-154YN	RESISTOR
	R43	QRSA08J-472YN	RESISTOR
	R44	QRSA08J-472YN	RESISTOR
	R45	QRSA08J-473YN	RESISTOR
	R46	QRSA08J-473YN	RESISTOR
	R47	QRSA08J-223YN	RESISTOR
	R48	QRSA08J-223YN	RESISTOR
	R49	QRSA08J-223YN	RESISTOR
	R50	QRSA08J-103YN	RESISTOR
	R51	QRSA08J-103YN	RESISTOR
	R52	QRSA08J-223YN	RESISTOR
	R53	QRSA08J-473YN	RESISTOR
	R54	QRSA08J-223YN	RESISTOR
	R55	QRSA08J-223YN	RESISTOR
	R56	QRSA08J-223YN	RESISTOR
	R57	QRSA08J-223YN	RESISTOR
	R58	QRSA08J-473YN	RESISTOR
	R59	QRSA08J-332YN	RESISTOR
	R60	QRSA08J-332YN	RESISTOR
	R61	QRSA08J-681YN	RESISTOR
	R62	QRSA08J-681YN	RESISTOR
	R63	QRSA08J-103YN	RESISTOR
	R64	QRSA08J-103YN	RESISTOR
	R65	QRSA08J-103YN	RESISTOR
	R66	QRSA08J-103YN	RESISTOR
	R67	QRSA08F-332YN	RESISTOR
	R68	QRSA08F-332YN	RESISTOR
	R69	QRSA08F-332YN	RESISTOR
	R70	QRSA08F-332YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R71	QRV141F-5111A	CMF RESISTOR
	R73	QRD167J-470	RESISTOR
	R74	QRV141F-4701A	CMF RESISTOR
	R75	QRV141F-5601A	CMF RESISTOR
	R76	QVPC402-102	V RESISTOR
	R77	QRV141F-4701A	CMF RESISTOR
	R78	QRD167J-470	RESISTOR
	R79	QRSA08F-332YN	RESISTOR
	R80	QRSA08F-332YN	RESISTOR
	R81	QRSA08F-332YN	RESISTOR
	R82	QRSA08F-332YN	RESISTOR
	R83	QRV141F-5111A	CMF RESISTOR
	R85	QRD167J-470	RESISTOR
	R86	QRV141F-4701A	CMF RESISTOR
	R87	QRV141F-5601A	CMF RESISTOR
	R88	QVPC402-102	V RESISTOR
	R89	QRV141F-4701A	CMF RESISTOR
	R90	QRD167J-470	RESISTOR
	R91	QRSA08J-103YN	RESISTOR
	R92	QRSA08J-103YN	RESISTOR
	R93	QRSA08J-103YN	RESISTOR
	R94	QRSA08J-103YN	RESISTOR
	R95	QRSA08J-472YN	RESISTOR
	R96	QRSA08J-472YN	RESISTOR
	R97	QRSA08J-472YN	RESISTOR
	R98	QRSA08J-472YN	RESISTOR
	R99	QRSA08J-103YN	RESISTOR
	R100	QRSA08J-123YN	RESISTOR
	R101	QRSA08J-473YN	RESISTOR
	R102	QRSA08J-473YN	RESISTOR
	C1	QCYA1HK-102	CAPACITOR
	C2	QEE41AM-475	TANTAL CAPACITOR
	C3	QEE41AM-475	TANTAL CAPACITOR
	C4	QER41CM-106	E CAPACITOR
	C5	QEPA1AM-226	NP E CAPACITOR
	C6	QCSA1HJ-330	CAPACITOR
	C7	QCSA1HJ-330	CAPACITOR
	C8	QEK41AM-107	E CAPACITOR
	C9	QER41CM-106	E CAPACITOR
	C10	QER41CM-106	E CAPACITOR
	C11	QEPA1AM-106	NP E CAPACITOR
	C12	QEPA1AM-106	NP E CAPACITOR
	C13	QEPA1AM-106	NP E CAPACITOR
	C14	QEPA1AM-106	NP E CAPACITOR
	C15	QCYA1HK-102	CAPACITOR
	C16	QEE41AM-475	TANTAL CAPACITOR
	C17	QEE41AM-475	TANTAL CAPACITOR
	C18	QER41CM-106	E CAPACITOR
	C19	QEPA1AM-226	NP E CAPACITOR
	C20	QCSA1HJ-330	CAPACITOR
	C21	QCSA1HJ-330	CAPACITOR
	C22	QEK41AM-107	E CAPACITOR
	C23	QER41CM-106	E CAPACITOR
	C24	QER41CM-106	E CAPACITOR
	C27	QER40JM-226	E CAPACITOR
	C28	QEK41AM-107	E CAPACITOR
	C29	QCSA1HJ-470	CAPACITOR
	C32	QCSA1HJ-470	CAPACITOR
	C33	QER41CM-106	E CAPACITOR
	C34	QER41CM-106	E CAPACITOR
	C36	QEK41AM-107	E CAPACITOR
	C37	QEK41AM-107	E CAPACITOR
	C38	QEK41AM-107	E CAPACITOR
	C39	QEK41AM-107	E CAPACITOR
	C40	QEK41AM-107	E CAPACITOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C41	QEK41AM-107	E CAPACITOR
	C42	QEK41AM-107	E CAPACITOR
	C43	QEK41AM-227	E CAPACITOR
	C44	QER41CM-106	E CAPACITOR
	C45	QCSA1HJ-330	CAPACITOR
	C46	QCSA1HJ-330	CAPACITOR
	C47	QCSA1HJ-330	CAPACITOR
	C48	QCSA1HJ-330	CAPACITOR
	C49	QER41CM-106	E CAPACITOR
	C50	QER41CM-106	E CAPACITOR
	C51	QER41CM-106	E CAPACITOR
	C52	QER41CM-106	E CAPACITOR
	SW1	QSS1A43-L01	SLIDE SWITCH
	SW2	QSS1A43-L01	SLIDE SWITCH
	SW3	QSS1A42-L01	SLIDE SWITCH
	SW4	QSS1A42-L01	SLIDE SWITCH
	SW5	QSS1A42-L01	SLIDE SWITCH
	VA1	PU49624-2	VARISTOR
	VA2	PU49624-2	VARISTOR
	VA3	PU49624-2	VARISTOR
	VA4	PU49624-2	VARISTOR
	VA5	PU49624-2	VARISTOR
	CN1	PU58844-106R	CAP HOUSING
	CN2	PU58844-110	CAP HOUSING
	CN3	PU58844-106	CAP HOUSING
	CN4	PU58844-10R	CAP HOUSING
	CN5	PU58844-7R	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING

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6.2.12 AUDIO CONNECTOR BOARD ASSY 14

	PWBA	PGE40273A-02	AUDIO CONNECTOR ASSY
	L1	PU48530-8R2K	COIL, X4, (L1-L4)
	VA1	PU49624-2	VARISTOR, X4, (VA1-VA4)
	CN1	PU58844-106	CAP HOUSING
	CN2	PGZ00928	XLR CONNECTOR
	CN3	PGZ00928	XLR CONNECTOR

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6.2.13 SWITCH BOARD ASSY 15

	PWBA	PGE30055A-05	SWITCH BOARD ASSY
	R1	PGZ00687	V RESISTOR , NORMAL AUD-1
	R2	PGZ00687	V RESISTOR , NORMAL AUD-2
	R3	PGZ00688	V RESISTOR , FM AUD-1
	R4	PGZ00688	V RESISTOR , FM AUD-2
	R5	PGZ00688	V RESISTOR , MONITOR LEV
	R6	PGZ00759	V RESISTOR , TRACKING
	R7	QRD161J-222	RESISTOR
	S1	PU57908	SLIDE SWITCH
	S2	PU57908	SLIDE SWITCH
	S3	PU57908	SLIDE SWITCH
	S4	PU57908	SLIDE SWITCH
	S5	PU57956	SLIDE SWITCH
	S6	PGZ00766	SLIDE SWITCH
	S7	PGZ00766	SLIDE SWITCH
	S8	PU57908	SLIDE SWITCH
	CN1	PU58844-104	CAP HOUSING
	CN2	PU58844-107	CAP HOUSING
	CN3	PU58844-110Y	CAP HOUSING
	CN4	PU58844-105	CAP HOUSING
	CN5	PU58844-102Y	CAP HOUSING
	CN6	PU58844-102R	CAP HOUSING
	CN7	PU58844-102	CAP HOUSING

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6.2.14 VIDEO PREAMP BOARD ASSY 16

	PWBA	PGE20243A-01	VIDEO PRE AMP BOARD ASSY
	IC1	HA11782	IC
	Q1	2SC2778C	TRANSISTOR
	Q2	2SC2778C	TRANSISTOR
	Q3	2SC2778C	TRANSISTOR
	Q4	2SC2778C	TRANSISTOR
	R1	QRSA08J-3R9YN	C RESISTOR
	R2	QRSA08J-390YN	RESISTOR
	R3	QRSA08J-390YN	RESISTOR
	R4	QRSA08J-3R9YN	C RESISTOR
	R5	QRSA08J-122YN	RESISTOR
	R6	QRSA08J-122YN	RESISTOR
	R7	QRSA08J-122YN	RESISTOR
	R8	QRSA08J-122YN	RESISTOR
	R9	QRSA08J-104YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R11	QRSA08J-123YN	RESISTOR
	R12	QRSA08J-123YN	RESISTOR
	R13	QRSA08J-104YN	RESISTOR
	R14	QRSA08J-103YN	RESISTOR
	R15	PU57457-682	V RESISTOR , PB CH BAL
	R16	QRSA08J-101YN	RESISTOR
	R17	QRSA08J-333YN	RESISTOR
	R18	QRSA08J-681YN	RESISTOR
	R19	QRSA08J-681YN	RESISTOR
	R20	PU57457-471	RESISTOR
	R21	PU57457-471	RESISTOR
	C1	QEE41EM-105	T CAPACITOR
	C2	QEE41EM-105	T CAPACITOR
	C3	QCYA1HK-223	CAPACITOR
	C4	QCYA1HK-223	CAPACITOR
	C5	QCYA1HK-223	CAPACITOR
	C6	QCYA1HK-223	CAPACITOR
	C7	QCYA1HK-223	CAPACITOR
	C8	QCYA1HK-223	CAPACITOR
	C9	QCYA1HK-223	CAPACITOR
	C10	QCYA1HK-223	CAPACITOR
	C11	QCYA1HK-223	CAPACITOR
	C12	QCYA1HK-223	CAPACITOR
	C13	QCYA1HK-223	CAPACITOR
	C14	QCYA1HK-223	CAPACITOR
	C15	QER40JM-476	E CAPACITOR
	C16	QCYA1HK-223	CAPACITOR
	C17	QER40JM-476	E CAPACITOR
	C18	QCYA1HK-223	CAPACITOR
	C19	QCYA1HK-223	CAPACITOR
	C20	QCYA1HK-223	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C21	QCT05CH-100	CAPACITOR
	C22	PU57458-500	TRIMMER CAPACITOR , 2CH F
	C23	QCT05CH-100	CAPACITOR
	C24	PU57458-500	TRIMMER CAPACITOR , 1CH F
	L1	PU53223-101G	PEAKING COIL
	L2	PU53223-101G	PEAKING COIL
	L3	PU53223-4R7G	PEAKING COIL
	L4	PU53223-4R7G	PEAKING COIL
	SLD1	PRD42031-01-01	SHIELD CASE(1)
	SLD2	PRD42032	SHIELD CASE(2)
	SLD3	PRD42205	SHEET
	SLD4	PRD42103	SHEET
	W1	PGZ00641	S.CABLE
	TP4	PU56008	TEST-PIN
	CN1	PU58844-9	CAP HOUSING
	CN2	PU59974-11	CAP HOUSING
	CN3	PGZ00642-05	CONNECTOR
	CN4	PU58844-3	CAP HOUSING

6.2.15 START SENSOR BOARD ASSY 18

	PWBA	PGE40156A	START SENSOR BOARD ASSY
	PT1	PN207TR	PHOTO TRANSISTOR
	C1	QCF11HP-473	CAPACITOR

6.2.16 END SENSOR BOARD ASSY 19

	PWBA	PGE40157A	END SENSOR BOARD ASSY
	PT1	PN207TR	PHOTO TRANSISTOR
	C1	QCF11HP-473	CAPACITOR

6.2.17 DC IN BOARD ASSY 22

⚠	PWBA	PGE40120A-02	DC IN BOARD ASSY
	PWBB	PGE40120-01-03	DC IN BOARD

6.2.18 VIDEO OUTPUT BOARD ASSY 23

	PWBA	PGE40100A-04	VIDEO OUT BOARD ASSY
⚠	VA1	PU49624-2	VARISTOR
⚠	VA2	PU49624-2	VARISTOR
⚠	VA3	PU49624-2	VARISTOR

6.2.19 FUSE BOARD ASSY 25

	PWBA	PGE40239A	FUSE BOARD ASSEMBLY
	D1	D10SC3M	DIODE
	D2	D10SC3M	DIODE
	BKT1	PGD40771	FUSE BOARD BRACKET
⚠	HD1	PU51212	FUSE CLIP

6.2.20 MAIN SWITCH BOARD ASSY 26

	PWBA	PGE40244A	MAIN SWITCH BOARD ASSEMBLY
⚠	SW1	PGZ00597	MAIN SWITCH
	BKT1	PGD40930	SWITCH BRACKET

6.2.21 OPERATION BUTTON BOARD ASSY 27

	PWBA	PGE40121A-01	OPERATION BUTTON BOARD ASSY
	IC1	M51953AL	IC
	Q1	DTC124EF	TRANSISTOR
	Q2	DTC124EF	TRANSISTOR
	Q3	2SK656	FE TRANSISTOR
	D1	1SS133	DIODE
	R1	QRD167J-104	RESISTOR
	R2	QRD167J-123	RESISTOR
	R3	QRD167J-123	RESISTOR
	R4	QRD167J-333	RESISTOR
	R5	QRD167J-101	RESISTOR
	R6	QRD167J-821	RESISTOR
	C1	QER41CM-106	E CAPACITOR
	C2	QER41HM-474	E CAPACITOR
	C3	QEE41VM-225	TANTAL CAPACITOR
	C4	QCF11HP-472	CAPACITOR
	C5	PGZ00781-333	SUPER CAP
	SW1	PU53598	TACT SWITCH
	CN1	PU58844-5	CAP HOUSING
	CN2	PU58844-2	CAP HOUSING

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
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			* 6.2.22 PB COMB BOARD ASSEMBLY 2 9 *
			**********
	PWBA	PGE20229A-01	PB COMB BOARD ASSEMBLY
	IC1	CXL1004P	IC
	IC2	CXL1004P	IC
	Q1	2SC2778C	TRANSISTOR
	Q2	2SC2778C	TRANSISTOR
	Q3	2SC2778C	TRANSISTOR
	Q4	2SC2778C	TRANSISTOR
	Q5	2SC2778C	TRANSISTOR
	Q6	2SC2778C	TRANSISTOR
	Q7	2SC2778C	TRANSISTOR
	Q8	2SC2778C	TRANSISTOR
	Q9	2SC2778C	TRANSISTOR
	Q10	2SC2778C	TRANSISTOR
	Q11	2SC2778C	TRANSISTOR
	Q12	2SC2778C	TRANSISTOR
	Q13	2SC2778C	TRANSISTOR
	D1	1SS99	DIODE
	R1	QRSA08J-105YN	RESISTOR
	R2	QVZ3531-102	V RESISTOR , CCD BIAS
	R3	QRSA08J-223YN	RESISTOR
	R4	QRSA08J-333YN	RESISTOR
	R5	QRSA08J-0R0Y	RESISTOR
	R6	QRSA08J-272YN	RESISTOR
	R7	QRSA08J-101YN	RESISTOR
	R8	QRSA08J-122YN	RESISTOR
	R9	QRSA08J-105YN	RESISTOR
	R10	QVZ3531-102	V RESISTOR , CCD BIAS
	R11	QRSA08J-223YN	RESISTOR
	R12	QRSA08J-333YN	RESISTOR
	R13	QRSA08J-0R0Y	RESISTOR
	R14	QRSA08J-272YN	RESISTOR
	R15	QRSA08J-102YN	RESISTOR
	R16	QRSA08J-221YN	RESISTOR
	R17	QRSA08J-561YN	RESISTOR
	R18	QVZ3531-102	V RESISTOR , 2H DL LEV
	R19	QRSA08J-273YN	RESISTOR
	R20	QRSA08J-103YN	RESISTOR
	R21	QRSA08J-102YN	RESISTOR
	R22	QVZ3531-682	V RESISTOR , 2H DL PHASE
	R24	QRSA08J-102YN	RESISTOR
	R25	QRSA08J-152YN	RESISTOR
	R26	QRSA08J-333YN	RESISTOR
	R27	QRSA08J-333YN	RESISTOR
	R28	QRSA08J-333YN	RESISTOR
	R29	QRSA08J-333YN	RESISTOR
	R30	QRSA08J-101YN	RESISTOR
	R31	QRSA08J-101YN	RESISTOR
	R32	QRSA08J-681YN	RESISTOR
	R33	QRSA08J-221YN	RESISTOR
	R34	QRSA08J-102YN	RESISTOR
	R35	QRSA08J-222YN	RESISTOR
	R36	QRSA08J-221YN	RESISTOR
	R37	QRSA08J-562YN	RESISTOR
	R38	QRSA08J-221YN	RESISTOR
	R39	QRSA08J-222YN	RESISTOR
	R40	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R41	QRSA08J-102YN	RESISTOR
	R42	QRSA08J-104YN	RESISTOR
	R43	QRSA08J-103YN	RESISTOR
	R44	QRSA08J-103YN	RESISTOR
	R45	QRSA08J-393YN	RESISTOR
	R46	QRSA08J-103YN	RESISTOR
	R47	QRSA08J-472YN	RESISTOR
	R48	QRSA08J-152YN	RESISTOR
	R49	QRSA08J-332YN	RESISTOR
	R50	QRSA08J-0R0Y	RESISTOR
	C1	QCYA1HK-223	CAPACITOR
	C2	QCYA1HK-223	CAPACITOR
	C3	QER41HM-105	E CAPACITOR
	C4	QER41EM-335	E CAPACITOR
	C5	QCSA1HJ-101	CAPACITOR
	C6	QCYA1HK-223	CAPACITOR
	C7	QER41CM-476	E CAPACITOR
	C8	QER41EM-335	E CAPACITOR
	C9	QER41EM-335	E CAPACITOR
	C10	QCYA1HK-223	CAPACITOR
	C11	QER41CM-106	E CAPACITOR
	C12	QER41CM-106	E CAPACITOR
	C13	QCYA1HK-223	CAPACITOR
	C14	QCSA1HJ-120	CAPACITOR
	C15	QER41HM-105	E CAPACITOR
	C16	QER41EM-335	E CAPACITOR
	C17	QCSA1HJ-101	CAPACITOR
	C18	QCYA1HK-223	CAPACITOR
	C19	QER41CM-476	E CAPACITOR
	C20	QER41EM-335	E CAPACITOR
	C21	QER41EM-335	E CAPACITOR
	C22	QCYA1HK-223	CAPACITOR
	C23	QER41CM-106	E CAPACITOR
	C24	QER41CM-106	E CAPACITOR
	C25	QCYA1HK-223	CAPACITOR
	C26	QCSA1HJ-220	CAPACITOR
	C27	QCSA1HJ-151	CAPACITOR
	C28	QER41CM-476	E CAPACITOR
	C29	QCSA1HJ-330	CAPACITOR
	C30	QCYA1HK-223	CAPACITOR
	C31	QER41CM-476	E CAPACITOR
	C32	QER41CM-106	E CAPACITOR
	C33	QER41CM-106	E CAPACITOR
	C34	QCSA1HJ-150	CAPACITOR
	C35	QCSA1HJ-101	CAPACITOR
	C36	QER41CM-476	E CAPACITOR
	C37	QCYA1HK-822	CAPACITOR
	C38	QER41CM-476	E CAPACITOR
	C39	QCYA1HK-223	CAPACITOR
	C40	QER41CM-476	E CAPACITOR
	C41	QCSA1HJ-221	CAPACITOR
	L1	PGZ00638-101	COIL
	L2	PGZ00638-101	COIL
	L3	PU53618-4R7J	PEAKING COIL
	L4	PGZ00638-101	COIL
	L5	PGZ00638-101	COIL
	L6	PU53223-100J	PEAKING COIL
	L7	PGZ00638-101	COIL
	L8	PGZ00638-101	COIL
	LPF1-1	PGZ01036	LOW PASS FILTER
	LPF1-2	PGZ01037	LOW PASS FILTER
	K1	PGZ00627Z	CHIP FERRITE BEADS
	K2	PGZ00627Z	CHIP FERRITE BEADS
	K3	PGZ00627Z	CHIP FERRITE BEADS
	K4	PGZ00627Z	CHIP FERRITE BEADS
	K5	PGZ00627Z	CHIP FERRITE BEADS

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	K6	PGZ00627Z	CHIP FERRITE BEADS
	K7	PGZ00627Z	CHIP FERRITE BEADS
	K8	PGZ00627Z	CHIP FERRITE BEADS
	K9	PGZ00627Z	CHIP FERRITE BEADS
	K10	PGZ00627Z	CHIP FERRITE BEADS
	K11	PGZ00627Z	CHIP FERRITE BEADS
	J1	QWE251-06A2A2	WIRE
	SLD1	PGD40946	SHIELD CASE
	SLD2	PGD40947	SHIELD CASE
	TP1	PGZ01015	CHIP TEST POINT, X3
	TP GND	PU56008	TEST POINT
	CN1	PGZ00724-10	CONNECTOR
	CN2	PGZ00724-11	CONNECTOR
	CN3	PU58844-109	CAP HOUSING

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6.2.23 COLOR SUB BOARD ASSY 32

	PWBA	PGE20231A-01	COLOR SUB BOARD ASSEMBLY
	IC1	MN4538BS	IC
	IC2	MN4528BS	IC
	IC3	AN6308S	IC
	IC4	SN76515P	IC
	IC5	M51204TL	IC
	Q1	2SC2778C	TRANSISTOR
	Q2	2SC2778C	TRANSISTOR
	Q3	2SC2778C	TRANSISTOR
	Q4	2SC2778C	TRANSISTOR
	Q5	2SC2778C	TRANSISTOR
	Q6	2SC2778C	TRANSISTOR
	D1	DA204K	DIODE
	R1	QVZ3531-472	V RESISTOR
	R2	QRSA08J-103YN	RESISTOR
	R3	QRSA08J-103YN	RESISTOR
	R4	QRSA08J-103YN	RESISTOR
	R5	QVZ3531-472	V RESISTOR
	R6	QRSA08J-103YN	RESISTOR
	R7	QVZ3531-223	V RESISTOR
	R8	QRSA08J-562YN	RESISTOR
	R9	QRSA08J-103YN	RESISTOR
	R10	QVZ3531-223	V RESISTOR
	R11	QRSA08J-102YN	RESISTOR
	R12	QRSA08J-103YN	RESISTOR
	R13	QRSA08J-103YN	RESISTOR
	R14	QRSA08J-181YN	RESISTOR
	R15	QRSA08J-102YN	RESISTOR
	R16	QRSA08J-223YN	RESISTOR
	R17	QRSA08J-153YN	RESISTOR
	R18	QRSA08J-102YN	RESISTOR
	R19	QRSA08J-102YN	RESISTOR
	R20	QRSA08J-102YN	RESISTOR
	R21	QRSA08J-102YN	RESISTOR
	R22	QRSA08J-332YN	RESISTOR
	R23	QRSA08J-392YN	RESISTOR
	R24	QRSA08J-392YN	RESISTOR
	R25	QRSA08J-183YN	RESISTOR
	R26	QRSA08J-103YN	RESISTOR
	R27	QRSA08J-272YN	RESISTOR
	R28	QRSA08J-821YN	RESISTOR
	R29	QRSA08J-271YN	RESISTOR
	R30	QRSA08J-152YN	RESISTOR
	R31	QRSA08J-104YN	RESISTOR
	R32	QRSA08J-103YN	RESISTOR
	R33	QRSA08J-182YN	RESISTOR
	R34	QRSA08J-392YN	RESISTOR
	R35	QRSA08J-562YN	RESISTOR
	R36	QRSA08J-182YN	RESISTOR
	C1	QFN41HJ-102	M CAPACITOR
	C2	QFP42AF-272	PP CAPACITOR
	C3	QFN41HJ-102	M CAPACITOR
	C4	QFP42AF-272	PP CAPACITOR
	C5	QER40JM-476	E CAPACITOR
	C6	QCYA1HK-223	CAPACITOR
	C7	QCTA1CH-331	CAPACITOR
	C8	QCTA1CH-331	CAPACITOR
	C9	QCYA1HK-223	CAPACITOR
	C10	QCFA1EZ-104	CAPACITOR
	C12	QCYA1HK-223	CAPACITOR
	C13	QCYA1HK-223	CAPACITOR
	C14	QCSA1HJ-101	CAPACITOR
	C15	QER40JM-476	E CAPACITOR
	C16	QCYA1HK-223	CAPACITOR
	C17	QCYA1HK-223	CAPACITOR
	C18	QCYA1HK-223	CAPACITOR
	C19	QCYA1HK-223	CAPACITOR
	C20	QCYA1HK-223	CAPACITOR
	C21	QCYA1HK-223	CAPACITOR
	C22	QER41CM-106	E CAPACITOR
	C23	QCYA1HK-223	CAPACITOR
	L1	PU53223-221J	COIL
	L2	PU53223-471J	COIL
	L3	PU53223-221J	COIL
	CN1	QMV5001-008	HOUSING
	CN2	QMV5001-007	HOUSING

****

6.2.24 A/C HEAD BOARD 35

	PWB	PGE40009	A/C HEAD BOARD

****

6.2.25 VITC JUNC BOARD ASSY 36

	PWBA	PRK40003A-01	VITC JUNC BOARD ASSY
	IC1	TC4S81F	IC
	IC2	TC4S69F	IC
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	R1	QRSA08J-102YN	RESISTOR
	R2	QRSA08J-102YN	RESISTOR

3 6 3 7 3 8

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R3	QRSA08J-104YN	RESISTOR
	R4	QRSA08J-102YN	RESISTOR
	C1	QER40JM-476	E CAPACITOR
	C2	QCYA1HK-223	CAPACITOR
	L1	PGZ00638-101	COIL
	VA1	PU49624-2	VARISTOR
	CN1	PU58844-108	CAP HOUSING
	CN2	PU58844-110	CAP HOUSING
	CN3	PU58844-102	CAP HOUSING

****

* 6.2.26 ADVANCE REC BOARD ASSY 3 7 *

PWBA	PRK30011B-01	ADVANCE REC BOARD ASSY
IC1	VC2505-2	IC
R2	QRD167J-0R0	RESISTOR
R5	QRD167J-681	RESISTOR
R6	QRD167J-331	RESISTOR
R7	QRD167J-102	RESISTOR
R8	QVZ3531-101	V RESISTOR
R9	QVZ3531-222	V RESISTOR
R10	QVZ3531-332	V RESISTOR
R11	QRD167J-680	RESISTOR
R12	QRD167J-0R0	RESISTOR
B1	PU59499-2	BUS WIRE
B2	PU59499-2	BUS WIRE
B3	PU59499-2	BUS WIRE
B4	PU59499-2	BUS WIRE
B5	PU59499-3	BUS WIRE
B6	PU59499-3	BUS WIRE
B7	PU59499-2	BUS WIRE
B8	PU59499-3	BUS WIRE
C1	QCF11HP-223	CAPACITOR
C2	QCF11HP-223	CAPACITOR
C5	QEE40JM-476	E CAPACITOR
C6	QER41CM-106	E CAPACITOR
C7	QCS11HJ-680	CAPACITOR
C8	QER41CM-476	E CAPACITOR
C9	QCF11HP-223	CAPACITOR
C10	QCS11HJ-560	CAPACITOR
C11	QER40JM-476	E CAPACITOR
C12	QCS11HJ-151	CAPACITOR
C13	QER41AM-476	E CAPACITOR
C14	QCS11HJ-680	CAPACITOR
C15	QCS11HJ-100	CAPACITOR
C16	QCS11HJ-560	CAPACITOR
C17	QER41CM-476	E CAPACITOR
L1	PU53223-221J	COIL
L2	PU53223-100J	COIL
L3	PU53223-101J	COIL
L4	PU53223-101J	COIL
L6	PU48530-270J	COIL
TP GND	PU56008	TEST-PIN
TP1	PU56008	TEST-PIN
CN1	PU58844-111	CAP HOUSING

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

****

* 6.2.27 VIDEO(2) BOARD ASSY 3 8 *

PWBA	PRK40007A-01	VIDEO(2) BOARD ASSY
IC1	TC4S81F	IC
IC2	AN6308S	IC
IC3	AN6308S	IC
Q1	2SA1022C	TRANSISTOR
Q2	2SC2778C	TRANSISTOR
Q3	2SK621	FE TRANSISTOR
Q4	2SK621	FE TRANSISTOR
Q5	2SC2778C	TRANSISTOR
Q6	2SC2778C	TRANSISTOR
Q7	2SA1022C	TRANSISTOR
Q8	2SD601A(QR)	TRANSISTOR
Q9	2SA1022C	TRANSISTOR
Q10	2SC2778C	TRANSISTOR
Q11	2SC2778C	TRANSISTOR
Q12	2SC2778C	TRANSISTOR
Q13	2SC2778C	TRANSISTOR
Q14	2SC2778C	TRANSISTOR
Q15	2SC2778C	TRANSISTOR
Q16	2SA1022C	TRANSISTOR
Q17	2SA1022C	TRANSISTOR
R1	QRSA08J-222YN	RESISTOR
R2	QRSA08J-102YN	RESISTOR
R3	QRSA08J-222YN	RESISTOR
R4	QRSA08J-102YN	RESISTOR
R6	QRSA08J-272YN	RESISTOR
R7	QRSA08J-272YN	RESISTOR
R8	QRSA08J-222YN	RESISTOR
R9	QRSA08J-181YN	RESISTOR
R10	QRSA08J-273YN	RESISTOR
R11	QRSA08J-222YN	RESISTOR
R12	QRSA08J-102YN	RESISTOR
R13	QRSA08J-471YN	RESISTOR
R14	QRSA08J-223YN	RESISTOR
R15	QRSA08J-103YN	RESISTOR
R16	QRSA08J-102YN	RESISTOR
R17	QRSA08J-101YN	RESISTOR
R18	QRSA08J-222YN	RESISTOR
R19	QRSA08J-561YN	RESISTOR
R20	QRSA08J-821YN	RESISTOR
R21	QRSA08J-102YN	RESISTOR
R22	QRSA08J-103YN	RESISTOR
R23	QRSA08J-223YN	RESISTOR
R24	QRSA08J-152YN	RESISTOR
R25	QRSA08J-471YN	RESISTOR
R26	QRSA08J-102YN	RESISTOR
R27	QRSA08J-152YN	RESISTOR
R28	QRSA08J-103YN	RESISTOR
R29	QRSA08J-223YN	RESISTOR
R30	QRSA08J-222YN	RESISTOR
R32	QRSA08J-472YN	RESISTOR
R33	QRSA08J-103YN	RESISTOR
R34	QRSA08J-103YN	RESISTOR
R35	QRSA08J-181YN	RESISTOR
R36	QRSA08J-102YN	RESISTOR
R37	QRSA08J-103YN	RESISTOR
R38	QRSA08J-181YN	RESISTOR
R39	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R40	QRSA08J-102YN	RESISTOR
	R41	QRSA08J-103YN	RESISTOR
	R42	QRSA08J-223YN	RESISTOR
	R43	QRSA08J-102YN	RESISTOR
	R44	QRSA08J-103YN	RESISTOR
	R45	QRSA08J-223YN	RESISTOR
	R46	QVZ3531-681	V RESISTOR
	R47	QVZ3531-681	V RESISTOR
	R48	QRSA08J-103YN	RESISTOR
	R49	QRSA08J-223YN	RESISTOR
	R50	QRSA08J-222YN	RESISTOR
	R51	QRSA08J-222YN	RESISTOR
	R52	QRSA08J-102YN	RESISTOR
	R53	QRSA08J-0R0Y	RESISTOR
	C1	QCSA1HJ-390	CAPACITOR
	C2	QCSA1HJ-121	CAPACITOR
	C3	QCFA1EZ-104	CAPACITOR
	C4	QCYA1HK-223	CAPACITOR
	C5	QER40JM-476	E CAPACITOR
	C6	QER40GM-476	ECAP
	C7	QCSA1HJ-270	CAPACITOR
	C8	QER40JM-476	E CAPACITOR
	C9	QCYA1HK-223	CAPACITOR
	C10	QER40JM-476	E CAPACITOR
	C11	QCSA1HJ-220	CAPACITOR
	C12	QEPA0JM-476	NP E CAPACITOR
	C13	QEPA0JM-476	NP E CAPACITOR
	C14	QCYA1HK-223	CAPACITOR
	C15	QCYA1HK-223	CAPACITOR
	C16	QCYA1HK-223	CAPACITOR
	C17	QCYA1HK-223	CAPACITOR
	C18	QCYA1HK-223	CAPACITOR
	C19	QCYA1HK-223	CAPACITOR
	C20	QCYA1HK-223	CAPACITOR
	C21	QER40JM-476	E CAPACITOR
	C22	QCYA1HK-223	CAPACITOR
	C23	QCYA1HK-223	CAPACITOR
	C24	QCYA1HK-223	CAPACITOR
	C25	QCYA1HK-223	CAPACITOR
	C26	QCYA1HK-223	CAPACITOR
	C27	QER40JM-476	E CAPACITOR
	C28	QCYA1HK-223	CAPACITOR
	L1	PU53223-471J	COIL
	L2	PGZ00638-101	COIL
	L3	PGZ00638-101	COIL
	L4	PGZ00638-101	COIL
	L5	PGZ00638-101	COIL
	CN1	PGZ01171-16	CONNECTOR
	CN2	PGZ01171-16	CONNECTOR
	CN3	PU58844-7	CAP HOUSING
	CN4	PU58844-10	CAP HOUSING

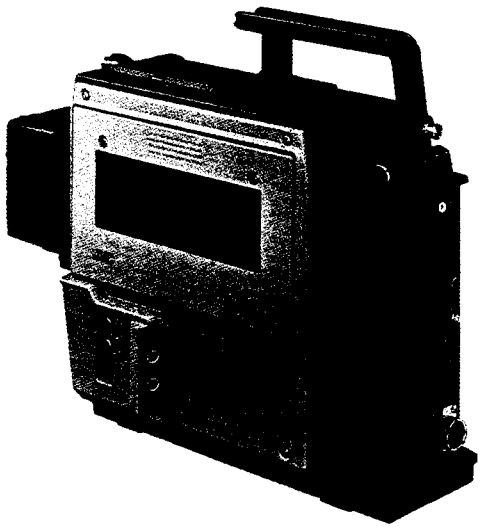
****

****
* 6.2.28 EARPHONE BOARD ASSY 3 9 *
****

PWBA	PGE40275A	EAR PHONE BOARD ASSY
J1	PU47500	MINI JACK, (JACK1)
CN1	PU58844-102	CAP HOUSING

CAMERA ADAPTER

SA-S41E



SPECIFICATIONS

GENERAL

Video signal system	: PAL-type colour signal/PAL-type Y/C signal
Power requirement	: DC 12 V
Power consumption	: 3 watts
Dimensions	: 352(W) x 248.5(H) x 137(D) mm (when attached to the recorder)
Weight	: 650 g
Operating temperature	: 0°C to 40°C, Non-water proof
Storage temperature	: –20°C to 50°C

VIDEO

Video input	
Line	: 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Y/C	: Y: 1.0 Vp-p, 75 ohms, unbalanced C: 0.3 Vp-p (Burst), 75 ohms, unbalanced

AUDIO

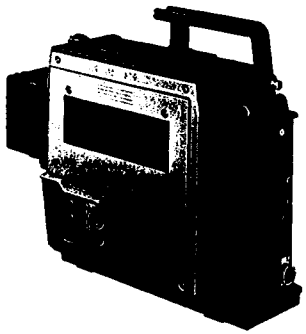
Audio input	
Line	: –6 dBs, 10 k-ohms, unbalanced
Camera microphone	: –60 dB, 3 k-ohms, balanced (14-pin: L) –20 dB, 10 k-ohms, unbalanced (14-pin: H, 10-pin)
ACCESSORIES	: Shoulder strap x 1 Battery for Remote control unit x 2 Remote control unit x 1 Base x 1

INSTRUCTIONS

JVC

SA-S41E

CAMERA ADAPTER
ADAPTATEUR DE CAMERA
KAMERA-ADAPTER



PGD30002-187

NOTE:
The rating plate (serial number plate) is on the rear of the unit.

CAUTION
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

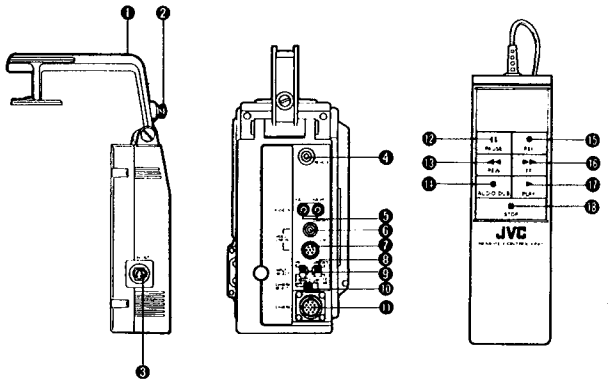
CONTENTS

Features 1
Controls, indicators and connectors . . . 2
Attaching to the BR-S411E/BR-S410EX . 4
Attaching the shoulder strap 4
Connections 5
Recording 6
Specifications 7

FEATURES

- Allows the BR-S411E or BR-S410EX to be used as a separate portable system in combination with a camera.
- The 14-pin camera connector supplies a maximum of 2 amperes of DC 12 V power to a connected camera.
- The video (composite and Y/C443) and audio input terminals permit the BR-S411E or BR-S410EX to record external signals from another video recorder.
- A remote control terminal is provided so that the recorder can be controlled via the provided remote control unit.

CONTROLS, INDICATORS AND CONNECTORS



❶ Carrying handle
❷ Hook
❸ AV OUT connector
Using the optional RF unit, connect this terminal to the antenna terminal of a TV receiver for playback or monitoring.
❹ REMOTE connector
Connect the provided remote control unit.
❺ AUDIO IN AUD-1 (L)/AUD-2 (R) connectors
Audio input connectors for normal and Hi-Fi audio.
❻ VIDEO LINE IN (COMPOSITE) connector
Input connector for composite video signal.
❼ VIDEO LINE IN (Y/C 443)
A separated Y/C input connector for an input signal which conforms to the Y/C 443 system. Use an appropriate Y/C cable when connecting to this terminal.
❽ INPUT SELECT (COMPOSITE/Y/C 443) switch
Selects the input signal (composite or Y/C 443) coming from the VIDEO LINE IN or CAMERA connector.
❾ INPUT SELECT (LINE/CAMERA) switch
Selects the input signal (camera or line) to be recorded.

⓭ CAMERA SELECT switch
Selects the type of camera to be connected.
14P H: Set to this position when a camera is connected using a 14-pin camera cable with high level microphone output (–20 dB).
14P L: Set to this position when a camera is connected using a 14-pin camera cable with low level microphone output (–60 dB).
10P: Set to this position when a 10-pin camera is used.

⓮ CAMERA connector
Connect a video camera using a 14-pin camera cable.
(DC 12 V outlet, max. 2.5A)

⓯ PAUSE/STILL button
Press to stop the tape temporarily during recording or playback. The PAUSE/STILL LED indicator will light. When this button is pressed during recording, the tape is rewound for 1.3 seconds and stops in the Record-Pause mode (when AEF mode is on). When the PLAY button is pressed, or triggered by the camera's start/stop button, the tape starts running and recording at the position where the previous recording stopped. When this button is pressed during playback, a still picture is obtained. To resume normal playback, press the PLAY button.

⓰ REW button
When the button is pressed in the Stop mode, the tape will be rewound with the E-E picture appearing on the monitor screen. The REW LED indicator will light.
Pressing this button in the Play or Still mode enables high-speed playback at about 9 times normal in the reverse direction.

⓱ A DUB button
To start audio dubbing, press the PLAY button while holding the A DUB button depressed. The A DUB and PLAY LED indicators will light and the sound on the normal audio-2 track will be replaced by new material.

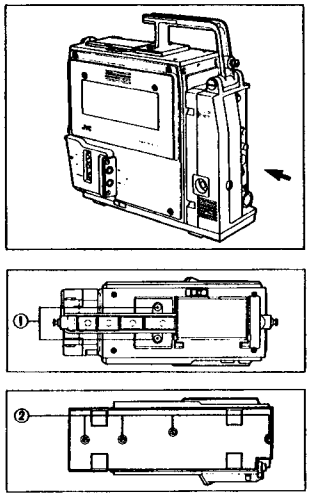
⓲ REC button
To start recording (video and audio), press this button together with the PLAY button. The recording mode will be engaged with the REC and PLAY LED indicators lit. To stop recording, press the STOP button.

⓳ FF button
When the button is pressed in the Stop mode, the tape will be fast-forwarded with the E-E picture appearing on the monitor screen. The FF LED indicator will light.
Pressing this button in the Play or Still mode enables high-speed playback at about 9 times normal in the forward direction.

⓴ PLAY button
Press to start playback. Press together with the REC button for recording, and with the A DUB button for audio dubbing.

㉑ STOP button
Press to stop the tape. When this button is pressed while the tape is running, the LED indicator lights and the tape is completely withdrawn into the cassette. This state is referred to as the Stop mode.

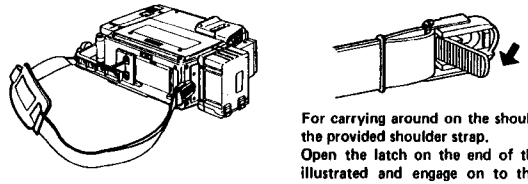
ATTACHING TO THE BR-S411E/BR-S410EX



To combine a camera with the BR-S410EX or BR-S411E to form a portable video system, the SA-S41E must be attached.
●Make sure that the Power switch is OFF.

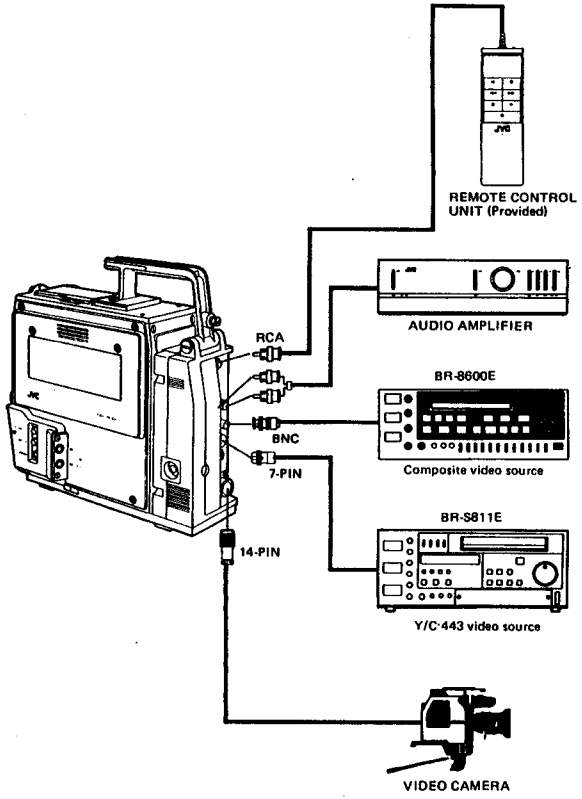
1. Slide onto the BR-S410EX or BR-S411E in the direction of the arrow, holding its lower portion.
2. Tighten 2 large screws (8 mm dia.), ①, retaining the carrying handle of the SA-S41E to the top of the BR-S410EX or BR-S411E with a Phillips screwdriver.
3. Tighten 4 screws ② on the base of the SA-S41E to the bottom of the BR-S410EX or BR-S411E with a coin or flathead screwdriver.

ATTACHING THE SHOULDER STRAP



For carrying around on the shoulder, attach the provided shoulder strap.
Open the latch on the end of the strap as illustrated and engage on to the hook ㉒, then close the latch.

CONNECTIONS

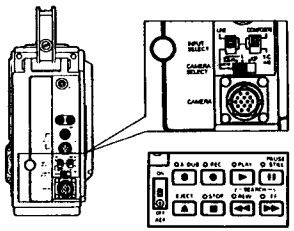


RECORDING

RECORDING VIA CAMERA CONNECTOR

●Connect the camera with its power save switch in the Standby position.

1. Set the INPUT SELECT LINE/CAMERA switch to CAMERA. Set the CAMERA SELECT switch as required depending on the camera cable used. Then set the INPUT SELECT COMPOSITE/Y/C433 switch as required depending on the type of camera output signal: to COMPOSITE when an ordinary video camera is used, and to Y/C443 when a S-VHS compatible camera (one with separate Y/C output signals) is used.
2. Press the REC and PLAY buttons of the BR-S410EX or BR-S411E simultaneously. The REC and PAUSE LED indicators will light.
3. To start recording, press the camera's trigger.



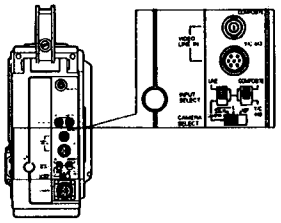
Notes:

●Set the CAMERA SELECT switch according to the output level of the camera's microphone (High or Low). The sound from the camera's microphone is recorded on normal audio-1 or Hi-Fi L channel.

●To record on normal audio-2 or Hi-Fi R channel, use the AUDIO IN AUD-2 (R) or MIC AUD-2 (R) connector. (BR-S410EX)

RECORDING VIA VIDEO LINE IN CONNECTOR

1. Set the INPUT SELECT LINE/CAMERA switch to LINE. Set the INPUT SELECT COMPOSITE/Y/C443 switch as required depending on the VIDEO LINE IN connector used.
2. Press the REC and PAUSE/STILL buttons simultaneously to enter the Record-Pause mode.
3. To start recording, press the PLAY button. To stop recording temporarily, press the PAUSE/STILL button. To end recording, press the STOP button.



Note:

●When using a camera, if the INPUT SELECT switch is set to LINE, recording cannot be started with the recorder's controls. (To make this possible, set the camera's power switch to OFF.)

SPECIFICATIONS

GENERAL

Video signal system	: PAL-type colour signal/PAL-type Y/C signal
Power requirement	: DC 12 V
Power consumption	: 3 watts
Dimensions	: 352(W) x 248.5(H) x 137(D) mm (when attached to the recorder)
Weight	: 650 g
Operating temperature	: 0°C to 40°C, Non-water proof
Storage temperature	: –20°C to 50°C

VIDEO

Video input	
Line	: 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Y/C	: Y: 1.0 Vp-p, 75 ohms, unbalanced C: 0.3 Vp-p (Burst), 75 ohms, unbalanced

AUDIO

Audio input	
Line	: –6 dBs, 10 k-ohms, unbalanced
Camera microphone	: –60 dB, 3 k-ohms, balanced (14-pin: L) –20 dB, 10 k-ohms, unbalanced (14-pin: H, 10-pin)
ACCESSORIES	: Shoulder strap x 1 Battery for Remote control unit x 2 Remote control unit x 1 Base x 1

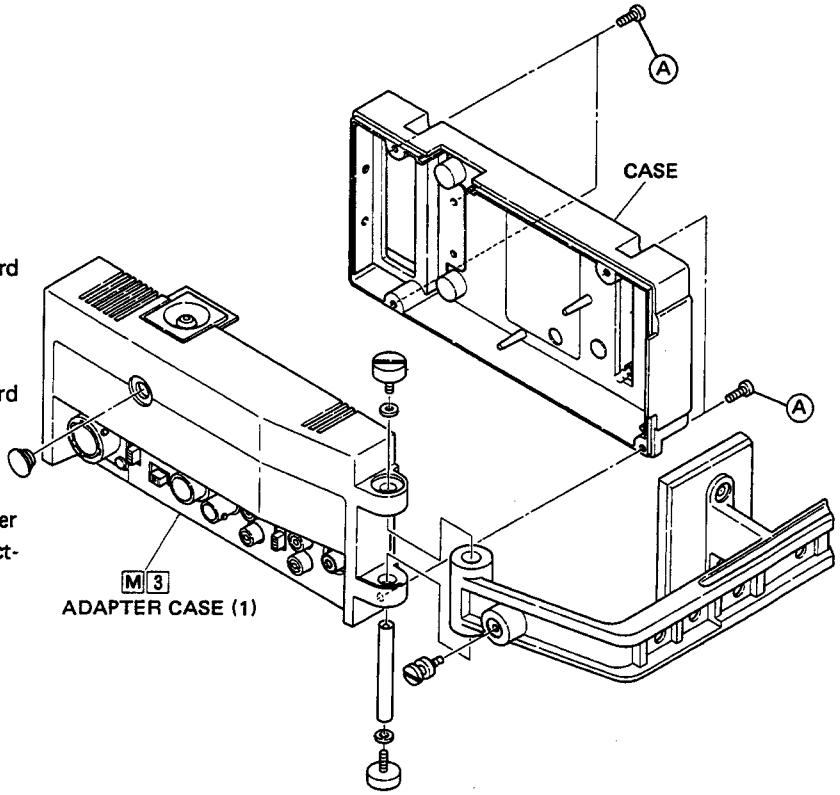
SECTION 1
DISASSEMBLY

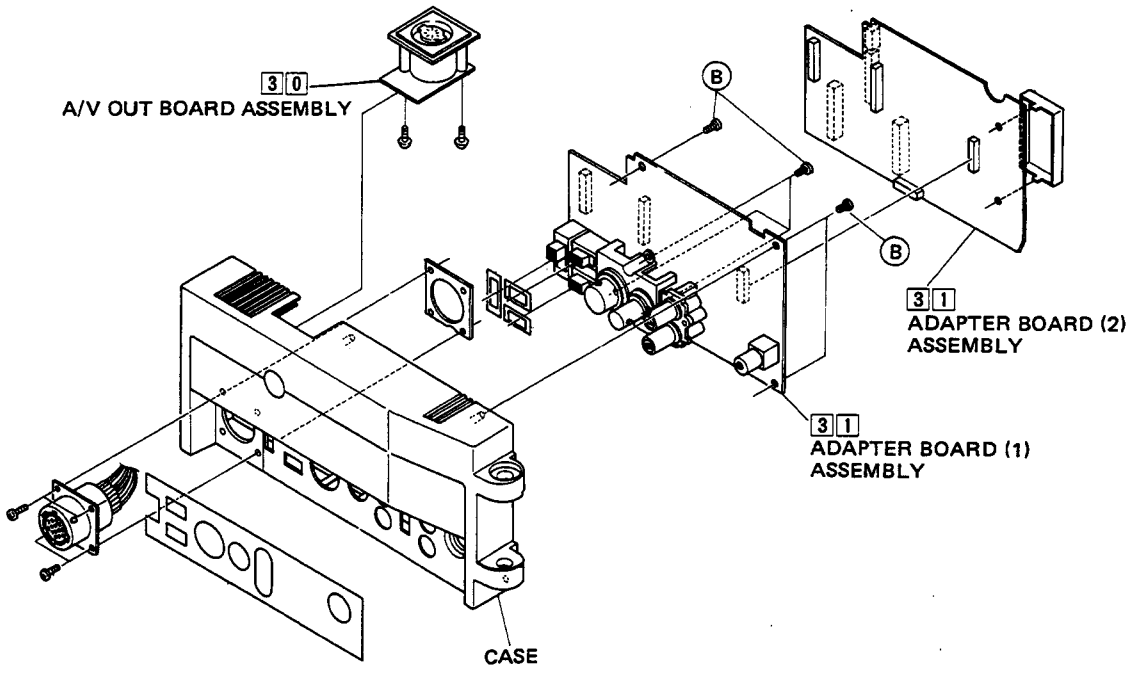
1.1 REMOVING CASE

1) Remove four screws Ⓐ and lift the case slightly to take if off.
2) After disconecting connectors from the board, it can be take apart.

1.2 REMOVING BOARDS

1. ADAPTER (2) BOARD
   1) Take off the case.
      (See Section 1.1)
   2) Disconect connectors and lift the board slightly, it can be taken off.
2. ADAPTER (1) BOARD
   1) Take off the ADAPTER (2) BOARD.
   2) Remove screws Ⓑ and lift the board slightly to take it off.
3. A/V OUT BOARD
   1) Take off the case (See Section 1.1)
   2) Slightly pull up the board. (or together with cover) from the case and disconecting connectors.





SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PRELIMINARY CHECKS AND CAUTIONS

1. Adjustments are required after replacing major parts of the electrical circuits. In all cases, first confirm that adjustment of a specific part is actually needed before disturbing its setting.
2. All adjustments are performed in the circuit boards.

2.2 REQUIRED TEST INSTRUMENTS AND FIXTURES

1. The following test instruments and fixtures (see Fig. 2-1) are required for electrical adjustments. Attempts to adjust without them would entail inordinate time and would not yield the required precision and performance.
2. In addition to the special fixtures, check that the following test equipment is available.
   - Frequency counter (better than 10 MHz, 100 mV sensitivity, high impedance input)
   - Video signal generator
   - Waveform monitor
   - Digital voltmeter (capable of reading down to 1 mV DC)
   - Sweep signal generator (100 kHz to 10 MHz)
   - Oscilloscope (dual-trace, better than 50 MHz)
   - Audio tester

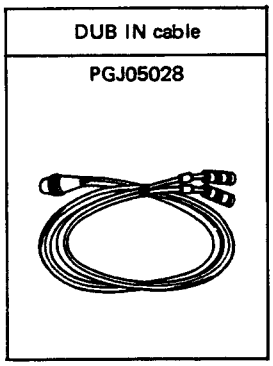


Fig. 2-1 Required special test equipment

3. Recommended additional fixtures

1) Shorting lead
This can be constructed easily as shown in the figure. It is used for shorting test pins.

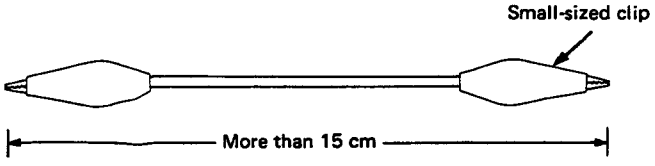


Fig. 2-2

2) Patch cord (PGJ05019)
To be used between the ADAPTER-1 PWB and the ADAPTER-2 PWB for measuring voltage and relating repair. (Refer to Fig. 2-3)

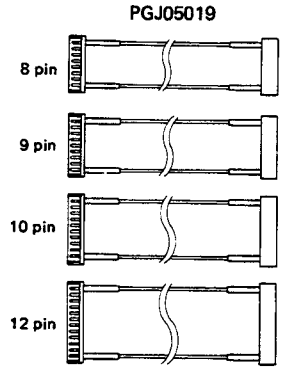


Fig. 2-3

3) Patch cord (PGJ05020)
To be used between the COLOR PWB and the COLOR SUB PWB or the PB COM PWB, and used between the AUDIO PWB and the FMA PWB for measuring voltage and relating repair. (Refer to Fig. 2-4)

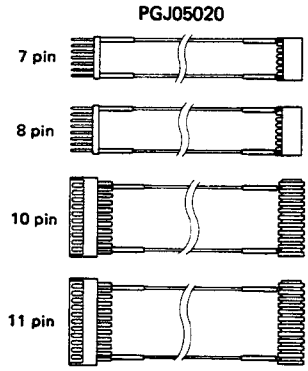
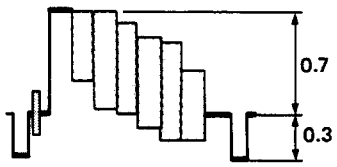


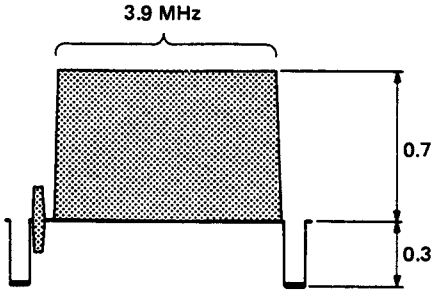
Fig. 2-4

4. Required video system test signals

1) EBU 75% colour bars



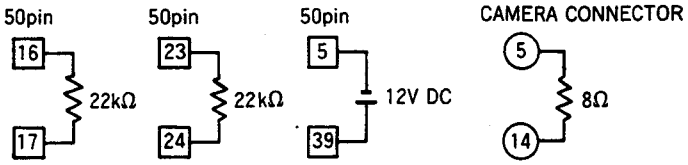
2) 3.9 MHz sine wave



2.3 ADAPTER CIRCUIT

2.3.1 Audio block

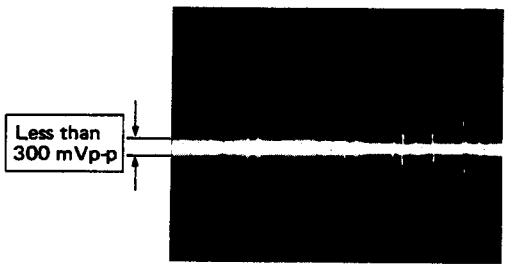
This is normally checked while installed in the BR-S411E.
To check it individually, initialize as follows.

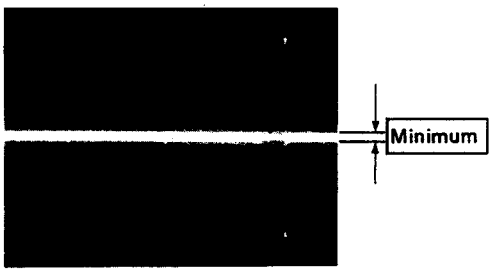


No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	Line input system output level	50-pin connector's Pin 17 (Pin 15: GND) Pin 24 (Pin 23: GND)	–	1 kHz	E-E	1) Set switches as follows. INPUT SELECT : LINE 2) Supply 1 kHz –6.0 dBs signals to AUDIO IN: AUDIO-1 and AUDIO-2. 3) Confirm –20.0 ± 1.0 dBs outputs at pins 17 and 24 of the 50-pin connector.
2	Camera input system output level	50-pin connector's Pin 17 (Pin 15: GND)	–	1 kHz	E-E	1) Set switches as follows. INPUT SELECT : CAMERA CAMERA SELECT: 14P-H 2) Supply a 1 kHz –20.0 dBs signal to pin 3 of the CAMERA connector. 3) Confirm –20.0 ± 1.0 dBs output at pin 17 of the 50-pin connector. 4) Set CAMERA SELECT switch to 10P. 5) Again confirm –20.0 ± 1.0 dBs output at pin 17 of the 50-pin connector. 6) Set CAMERA SELECT switch to 14P-L. 7) Level is set with measuring instrument connected. 8) Supply 1 kHz –60 dBs signal to CAMERA connector pins 3 and 4. 9) Confirm –20.0 ± 1.0 dBs output at pin 17 of the 50-pin connector.
3	Return audio output	14-pin CAMERA connector's pin 14	–	1 kHz	E-E	1) Set switches as follows. INPUT SELECT : LINE AUDIO OUT : NORM AUDIO MONITOR : MIX 2) Terminate pins 14 and 5 of the 14-pin CAMERA connector at 8 ohms. 3) Supply a 1 kHz –6.0 dBs signal to AUDIO IN (AUDIO-1 and AUDIO-2). 4) Set the NORMAL REC LEVEL controls for –6 dBs at AUDIO OUT. 5) Confirm –24.0 ± 2.0 dBs output at pin 14 of the 14-pin CAMERA connector.
4	A/V output	A/V OUT	–	Color bars 1 kHz	E-E	1) Make the A/V OUT terminal of open-circuit. 2) Confirm that DC voltage of pin 3 of the A/V OUT terminalis 8.0 ± 0.3 V DC. 3) Set the INPUT SELECT SW to 'LINE' and 'COMPOSITE'. 4) Confirm that shape of output waveform at pin 1 of the A/V OUT terminal is normal and its level is 2.0 ± 0.3 Vp-p. 5) Set the NORMAL REC LEVEL controls for –6 dBs at AUDIO OUT. 6) Confirm –3.0 ± 2.0 dB as the output level of pin 6 of the A/V OUT terminal.

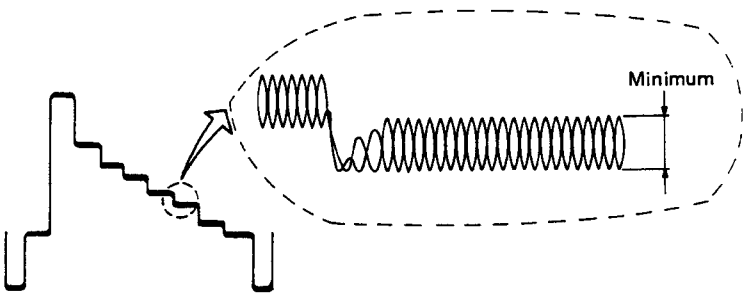
2.3.2 Video block

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
1	AGC output	TP9	R73	Color bars	E-E	1) Set the INPUT SELECT switch to 'LINE' and 'COMPOSITE'. 2) Supply the color bars signal to the VIDEO LINE IN. 3) Adjust R73 to obtain 1 Vp-p as video output at TP9.
2	BPF level	TP1		Color bars	E-E	1) Confirm that BPF level at TP1 is 1.6 ± 0.1 Vp-p.
3	DL2 level	TP1, TP2	R116	Color bars	E-E	1) Adjust R116 to obtain the maximum level as TP2's output, and this level must be confirmed larger than that of TP1. 2) Again adjust R116 to equalize the levels of TP1 and TP2.
4	CCD bias	TP5	R142, R150	Color bars	E-E	1) Adjust R142 and R150 for maximum color signal level at TP5.
5	2H delay level	TP5, TP6, TP4 (GND)	R154, R159	Color bars	E-E	1) Connect CH-1 probe of the dual-trace oscilloscope to TP5 while CH-2 probe to TP6. 2) Mix the signals. Set CH1 and CH2 ranges to be equal. 3) Adjust R154 and R159 for minimum color signal. 4) Confirm that the residual color level is less than 300 mVp-p.
6	CYH	TP7, TP4 (GND)	R159, R194	3.9 MHz osc. (Model 410P-JVC : LEADER)	E-E	1) Adjust R159 and R194 to minimize the 3.9 MHz sine wave at TP7.

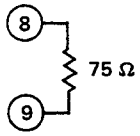




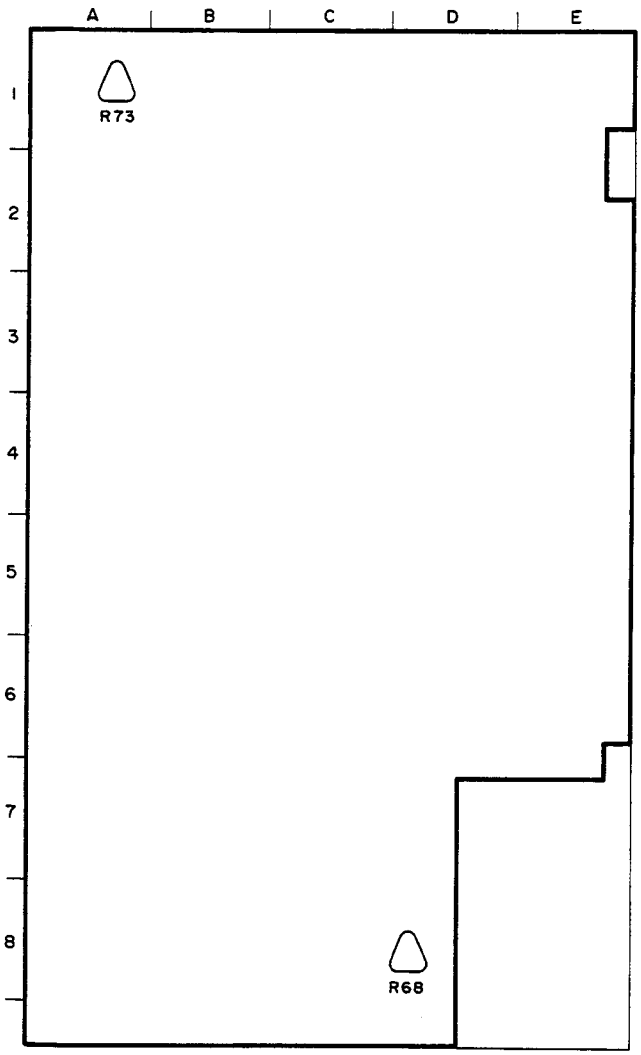
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Description
7	Y out level	TP8	R214	Color bars	E-E	1) Adjust R214 for 1.0 Vp-p Y signal at TP8.
8	Carrier leak	TP8, TP4 (GND)	R202, R204	Color bars	E-E	1) Adjust R202 and R204 to minimize chroma leak at TP8.
9	Color output level	C OUT (75Ω terminated)	R230	Color bars	E-E	1) Adjust R230 for 0.30 Vp-p butst level at pin 5 of the Y/C 443 OUT.
10	Return Y level	14-pin CAMERA connectors pin 9 (75Ω terminated)	R68	Color bars	E-E	1) Terminate pins 9 and 8 of the 14-pin CAMERA connector at 75 ohms. 2) Adjust R68 to obtain 1.0 Vp-p as Y level at pin 9 of the 14-pin CAMERA connector.



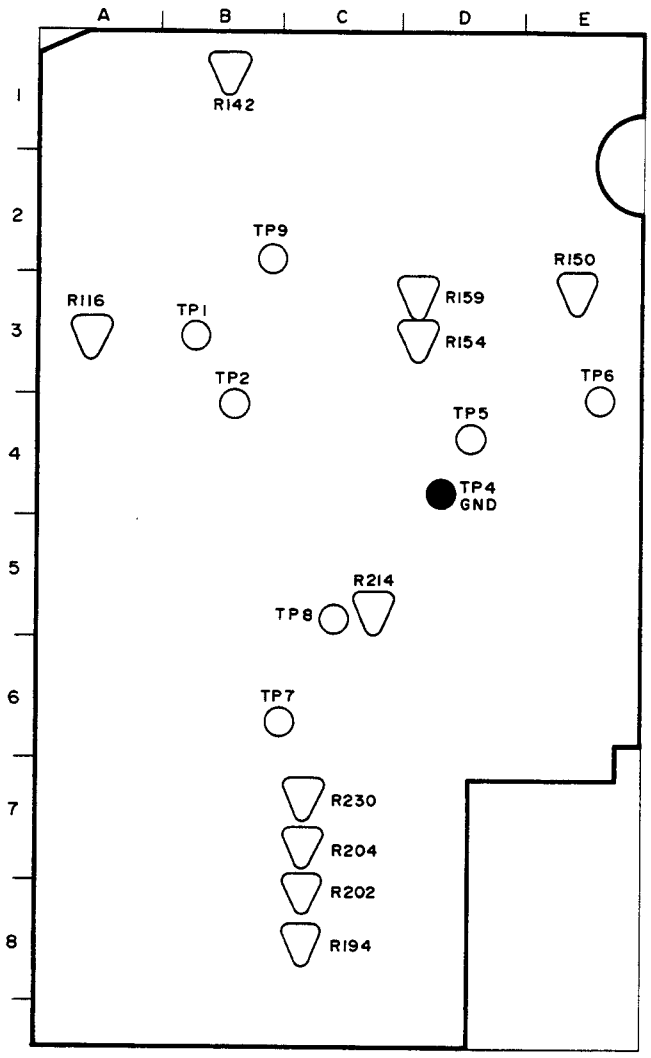
CAMERA CONNECTOR



– ADAPTER 1 –



– ADAPTER 2 –



– ADAPTER 2 –

TP	1	2	4	5	6	7	8	9
Location	B3	B3	D4	D4	E3	B6	C5	B2

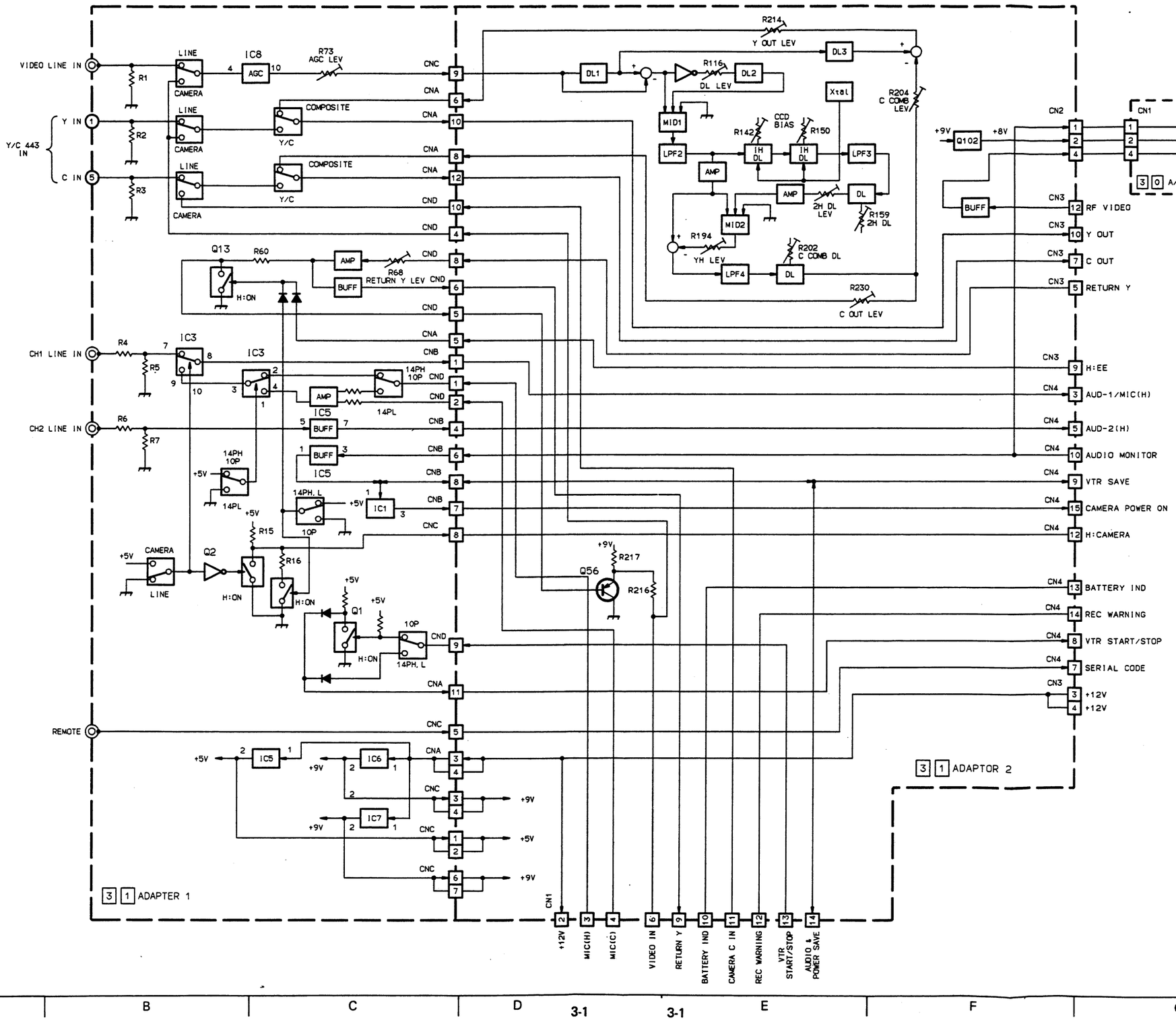
R	116	142	150	154	159	194	202	204	214	230
Location	A3	B1	E2	D3	D3	C8	C7	C7	C5	C7

–ADAPTER 1 –

R	68	73
Location	D8	A1

SECTION 3
DIAGRAMS AND CIRCUIT BOARDS

3.1 ADAPTER BLOCK DIAGRAM

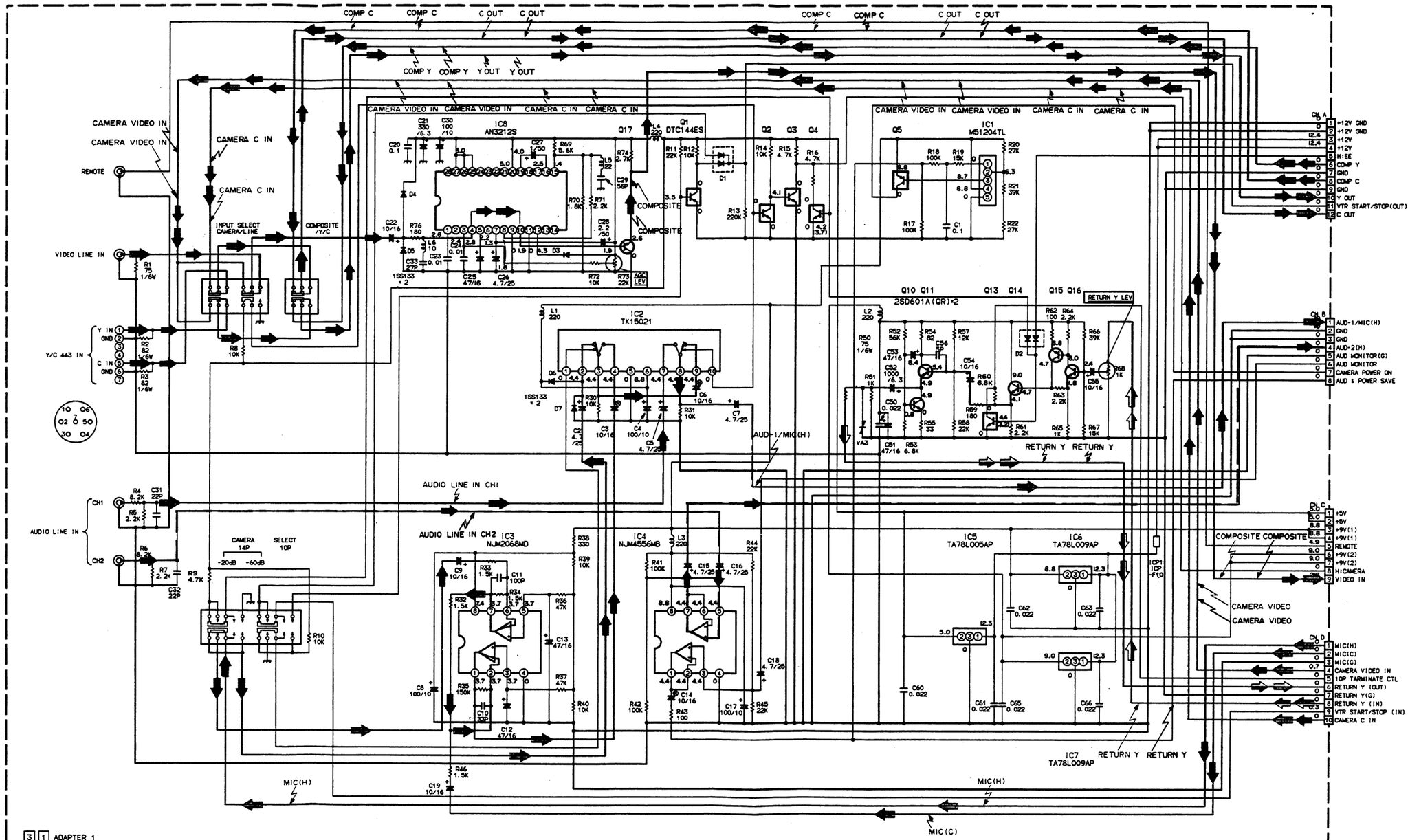


3.2 ADAPTER SCHEMATIC DIAGRAM

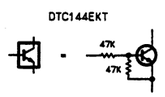
NOTES:
1. All resistance values are in ohms. (1/10 W)
2. All inductance values are in μH.
3. All capacitance values are in μF.
4. NPN type transistors are 2SC2778C.
5. PNP type transistors are 2SA1022C.
6. All diodes are DAN202K.
7. DC voltages measured with DVM in S-VHS mode. Parentheses ( ) indicate play-back voltage then this differs from recording.
8. Shaded ( ) parts are critical for safety. Replace only with specified part numbers.

Following symbls in schematic indicate circuit path accrding to mode.

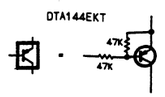
— ADAPTER 1 —



DTC144EKT



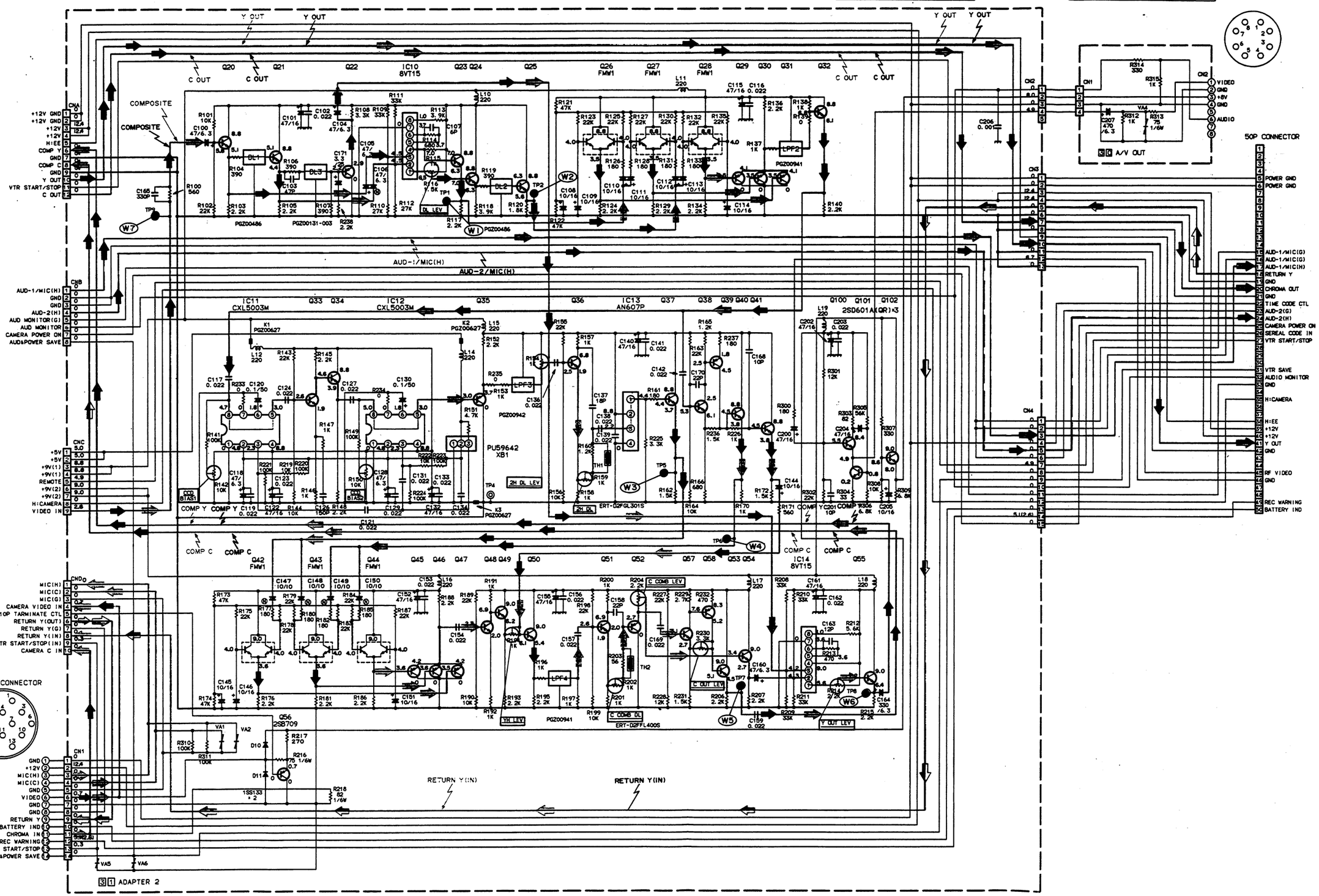
DTA144EKT



– ADAPTER 2 –

VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH

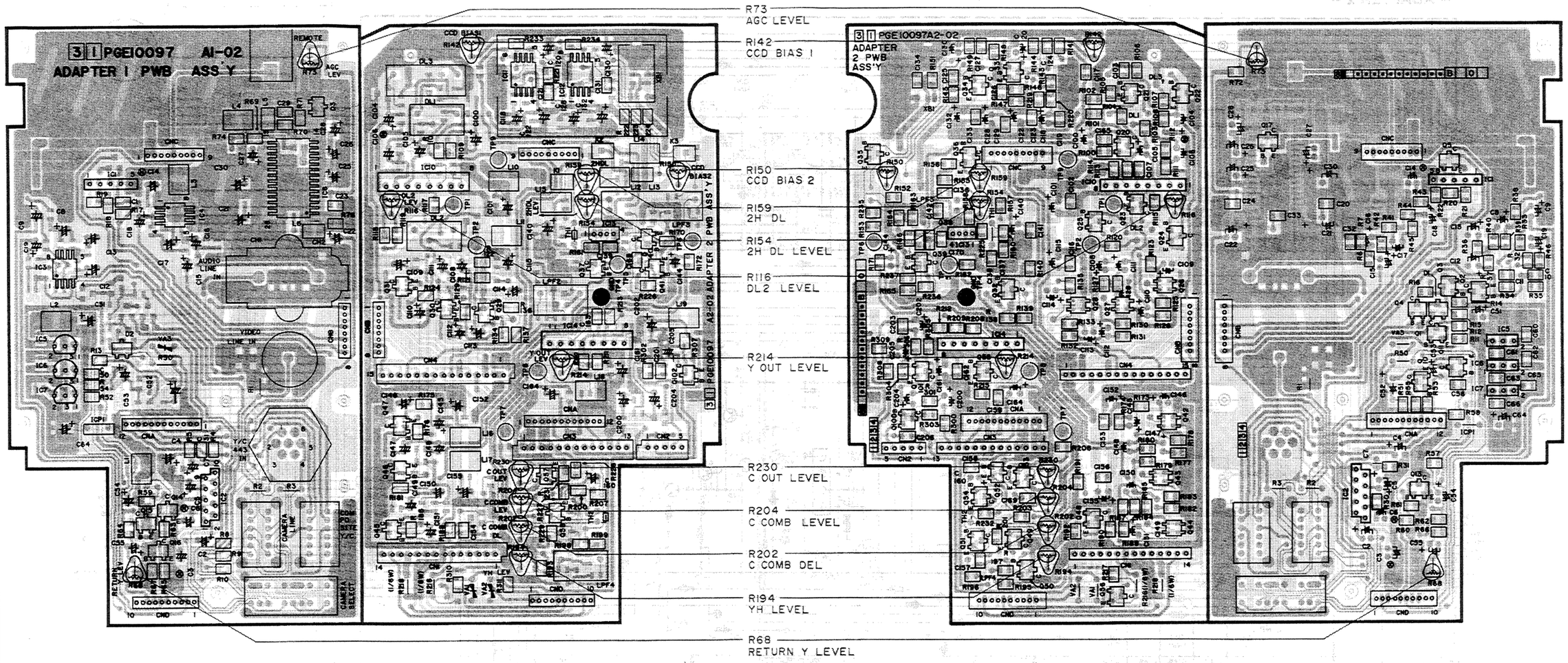
S-VHS:
- RECORDING SIGNAL PATH
- PLAYBACK SIGNAL PATH
- REC PLAY SIGNAL PATH



3.3 ADAPTER AND A/V OUT CIRCUIT BOARDS

— ADAPTER (Parts side) —

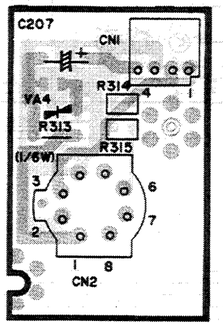
— ADAPTER (Pattern side) —



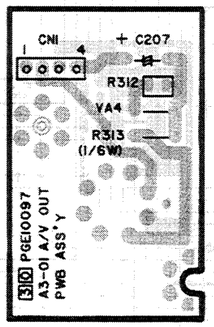
— MAIN WAVEFORM OF ADAPTER CIRCUIT —

W1	W2	W3	W4	W5	W6	W7
TP1 1.8 Vp-p [E-E]	TP2 2.0 Vp-p [E-E]	TP5 1.6 Vp-p [E-E]	TP6 1.7 Vp-p [E-E]	TP7 0.7 Vp-p [E-E]	TP8 1.0 Vp-p [E-E]	TP9 1.0 Vp-p [E-E]

— A/V OUT (Parts side) —



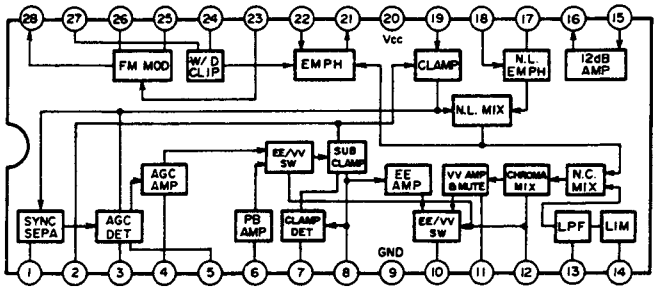
— A/V OUT (Pattern side) —



3.4 IC BLOCK DIAGRAMS

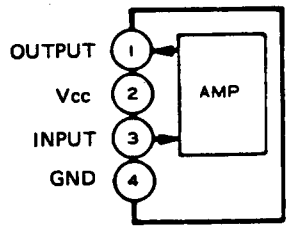
– AN3212S –

VTR Video Signal Processing Circuit

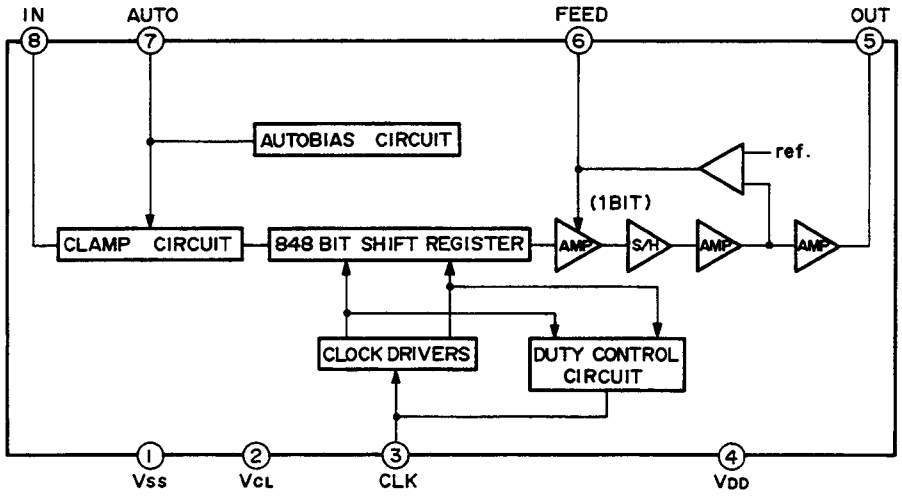


– AN607P –

Wide Band Amplifier Circuit

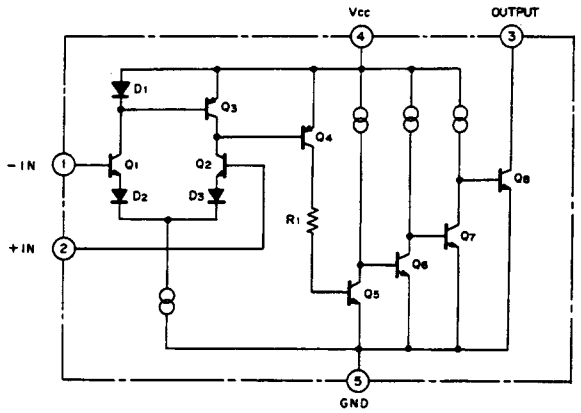


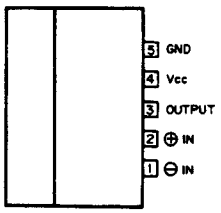
– CXL50003M –



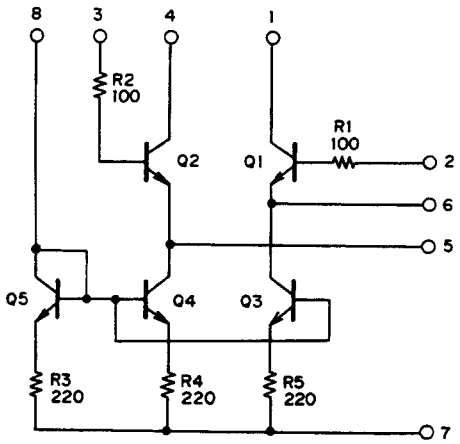
– M51204TL –

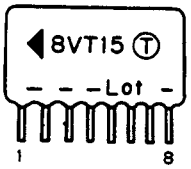
Comparator





– 8VT15 –





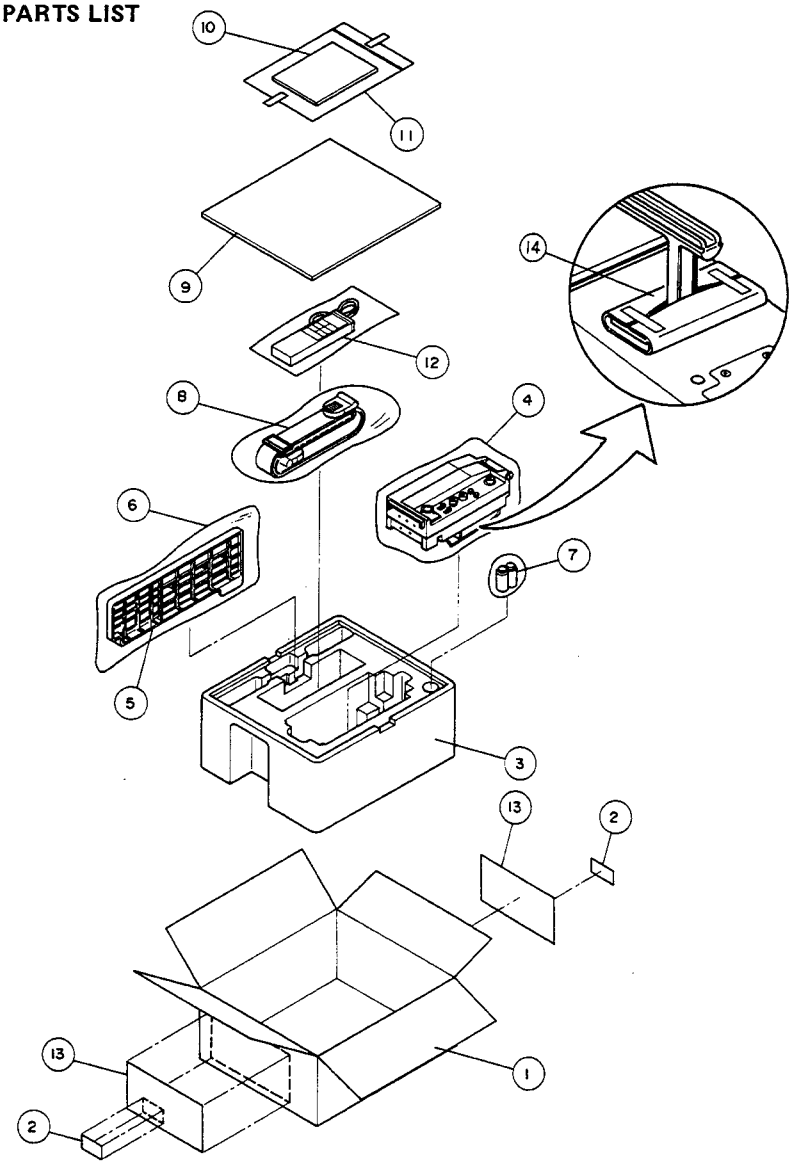
SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

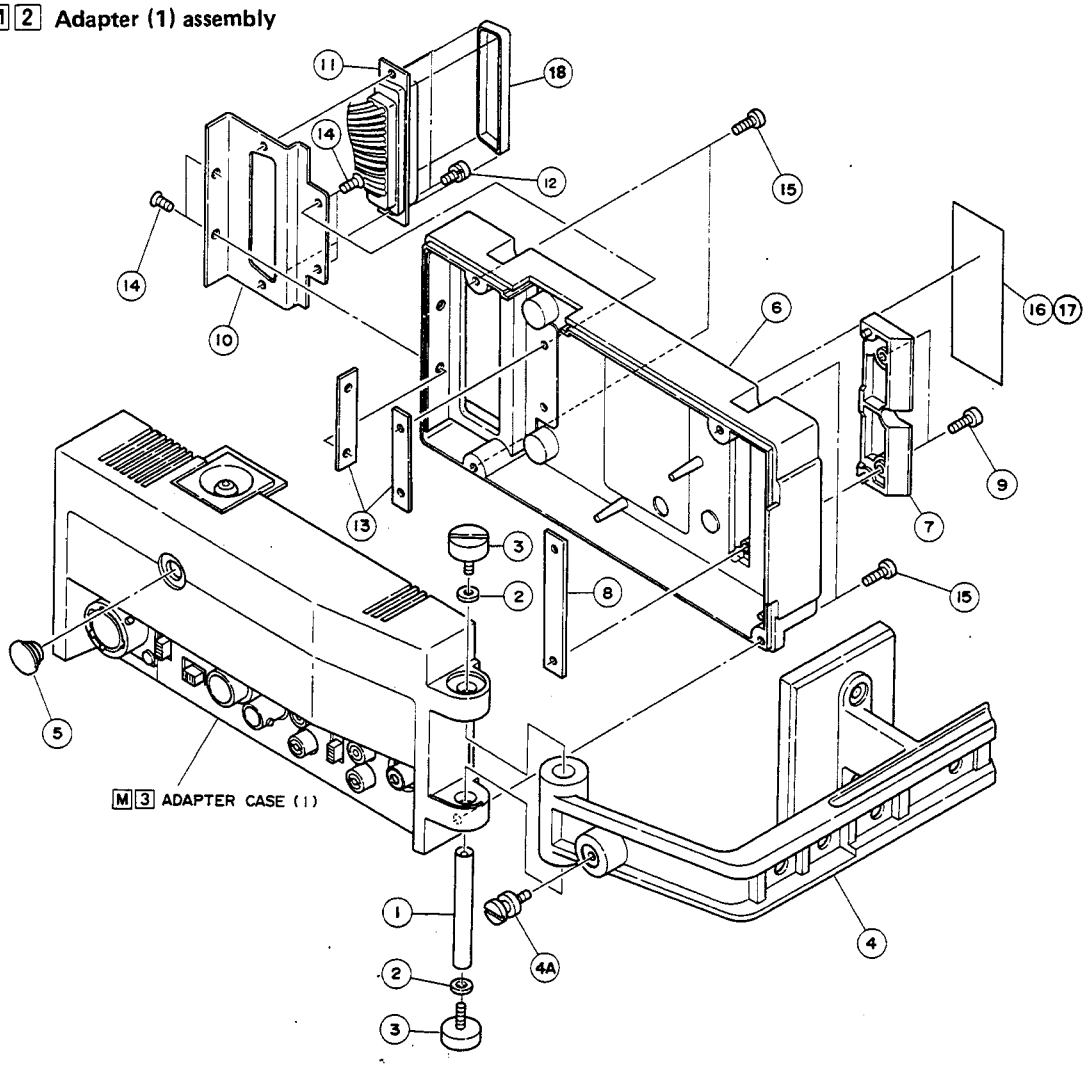
4.1 EXPLODED VIEWS AND PARTS LIST

4.1.1 [M][1] Packing assembly



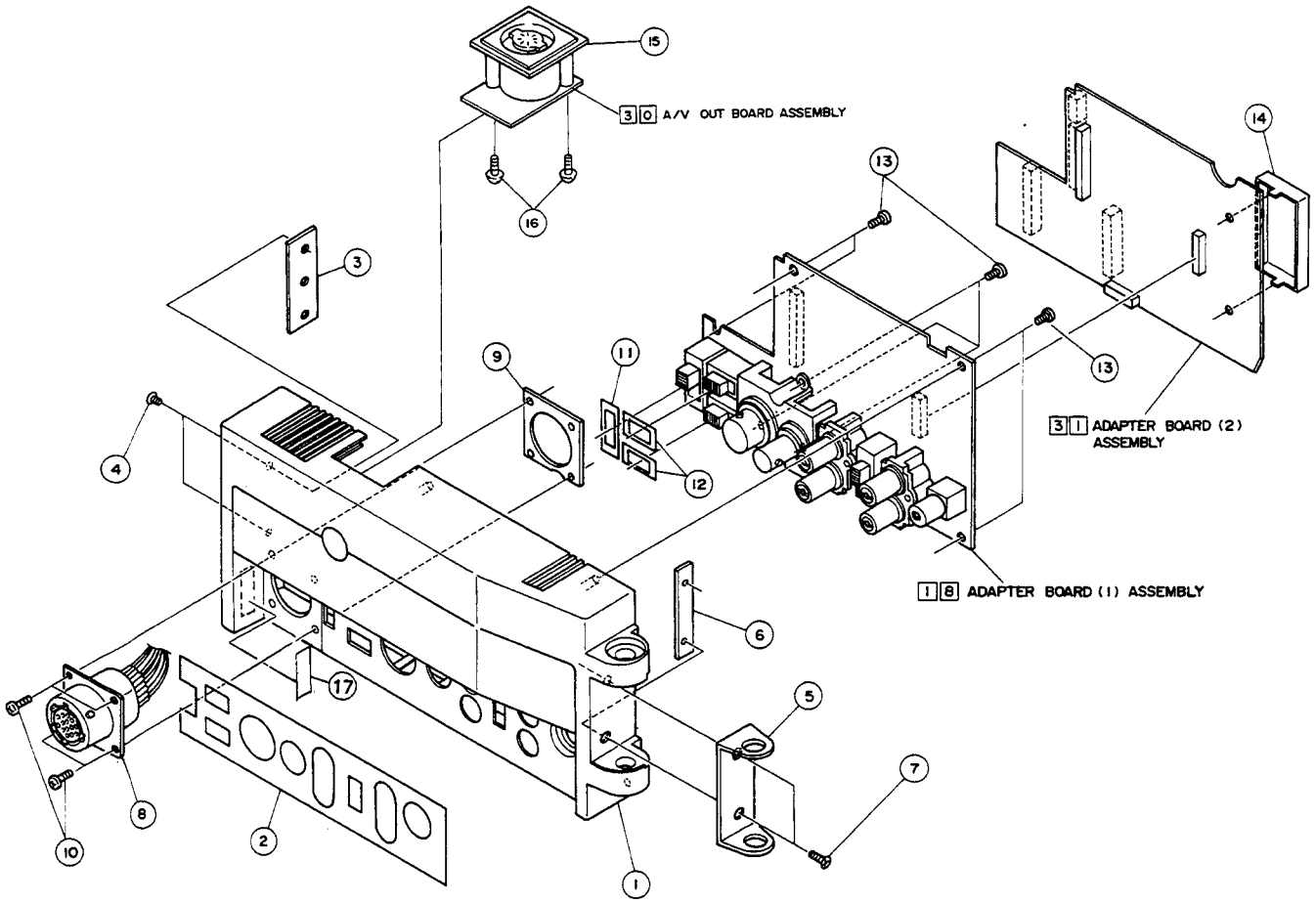
#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			1. PACKING ASSEMBLY [M][1]
	1	PRD30476	PACKING CASE
	2	PUP40619	SERIAL NO. STICKER, X2
	3	PRD20226	CUSHION
	4	QPGA025-03505	POLY BAG
	5	PGD30440A	BASE ASSY
	6	QPGA012-03005	POLY BAG
	7	UM-3DJ2P	BATTERY, X2
	8	PGZ00772	SHOULDER BELT
	9	PRD30475	CUSHION PLATE
⚠	10	PGD30002-187	INSTRUCTIONS
	11	QPGB024-03404	POLY BAG
	12	PGZ00773	REMOTE CONTROL UNIT
	13	PRD30394-04	PACKING LABEL, X2
	14	PRD42861	SHEET

4.1.2 M2 Adapter (1) assembly



#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			2. ADAPTER (1) ASSEMBLY M2
	1	PGD40756	SHAFT
	2	WLS4000N	WASHER, X2
	3	PGD40757	COIN SCREW, X2
	4	PGD30439A	HANDLE ASSY
	4A	PU53202-01-01	HOOK HOLDER
	5	PGD40758	CAP
⚠	6	PGD20175-01-02	ADAPTER CASE(2)
	7	SC30988-003	CAMERA GUIDE
	8	PGD40760	PLATE(3)
	9	SDSP3012M	SCREW, X2
	10	PGD40761	CONNECTOR BRACKET
	11	ML-G00450A-02	50P CONNECTOR
	12	LPSP2608Z	SCREW, X2
	13	PGD40755-01-01	PLATE(2), X2
	14	SSSP2606R	SCREW, X4
	15	SDSF3014M	SCREW, X4
	16	PGD40912	NO PLATE
⚠	17	PGD30022-07	SERIAL NO. PLATE
	18	PGZ01280-02	DUST CAP

4.1.3 [M][3] Adapter (2) assembly



#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

****

****
* 3. ADAPTER (2) ASSEMBLY [M][3] *
****

⚠	1	PGD20173-02-06	ADAPTER CASE(1)
	2	PGD40752-03	SHEET
	3	PGD40753	PLATE(1)
	4	SSSP3006R	SCREW, X2
	5	PGD40754-01-01	BRACKET
	6	PGD40755-01-01	PLATE(2)
	7	SSSP2606R	SCREW, X2
	8	PU52665	CONNECTOR, CAMERA(14PIN)
	9	PGD40853	CONNECTOR PLATE
⚠	10	SDSP3008R	SCREW, X4
	11	PGD40759-01-01	SHEET
	12	PGD40759-02	SHEET, X2
	13	SBSF3008Z	TAPPING SCREW, X7
	14	PGD40815	SHIELD CASE
	15	PGD30441	COVER
	16	SBSF2606Z	SCREW, X2
	17	PGD40895	LABEL

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1.1 A/V OUT BOARD ASSY 30

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PGE10097A3-01	A/V OUT BOARD ASSEMBLY
	R312	QRSA08J-102YN	RESISTOR
	R313	QRD167J-750	RESISTOR
	R314	QRSA08J-331YN	RESISTOR
	R315	QRSA08J-102YN	RESISTOR
	C207	QETA0JM-477	E CAPACITOR
	VA4	PU49624-2	VARISTOR
	CN1	PU58844-104	CAP HOUSING
	CN2	PGZ00834	CONNECTOR

5.1.2 ADAPTER BOARD ASSY 31

-ADAPTER BOARD (1) ASSY-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PGE10097A1-02	ADAPPTER BOARD (1) ASSEY
	IC1	M51204TL	IC
	IC2	TK15021	IC
	IC3	NJM2068MD	IC
	IC4	NJM4556MB	IC
⚠	IC5	TA78L005AP	IC
⚠	IC6	TA78L009AP	IC
⚠	IC7	TA78L009AP	IC
	IC8	AN3212S	IC
	Q1	DTC144ES	TRANSISTOR
	Q2	DTC144EK	TRANSISTOR
	Q3	DTC144EK	TRANSISTOR
	Q4	DTC144EK	TRANSISTOR
	Q5	DTA144EK	TRANSISTOR
	Q10	2SD601A(QR)	TRANSISTOR
	Q11	2SD601A(QR)	TRANSISTOR
	Q13	DTC114EK	TRANSISTOR
	Q14	2SC2778C	TRANSISTOR
	Q15	2SA1022C	TRANSISTOR
	Q16	2SC2778C	TRANSISTOR
	Q17	2SA1022C	TRANSISTOR
	D1	DAN202K	DIODE
	D2	DAN202K	DIODE
	D3	DAN202K	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D7	1SS133	DIODE
	R1	QRD167J-750	RESISTOR
	R2	QRD167J-820	RESISTOR
	R3	QRD167J-820	RESISTOR
	R4	QRSA08J-822YN	RESISTOR
	R5	QRSA08J-222YN	RESISTOR
	R6	QRSA08J-822YN	RESISTOR
	R7	QRSA08J-222YN	RESISTOR
	R8	QRSA08J-103YN	RESISTOR
	R9	QRSA08J-472YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R11	QRSA08J-223YN	RESISTOR
	R12	QRSA08J-103YN	RESISTOR
	R13	QRSA08J-224YN	RESISTOR
	R14	QRSA08J-103YN	RESISTOR
	R15	QRSA08J-472YN	RESISTOR
	R16	QRSA08J-472YN	RESISTOR
	R17	QRSA08J-104YN	RESISTOR
	R18	QRSA08J-104YN	RESISTOR
	R19	QRSA08J-153YN	RESISTOR
	R20	QRSA08J-273YN	RESISTOR
	R21	QRSA08J-393YN	RESISTOR
	R22	QRSA08J-273YN	RESISTOR
	R30	QRSA08J-103YN	RESISTOR
	R31	QRSA08J-103YN	RESISTOR
	R32	QRSA08J-152YN	RESISTOR
	R33	QRSA08J-152YN	RESISTOR
	R34	QRSA08J-152YN	RESISTOR
	R35	QRSA08J-154YN	RESISTOR
	R36	QRSA08J-473YN	RESISTOR
	R37	QRSA08J-473YN	RESISTOR
	R38	QRSA08J-331YN	RESISTOR
	R39	QRSA08J-103YN	RESISTOR
	R40	QRSA08J-103YN	RESISTOR
	R41	QRSA08J-104YN	RESISTOR
	R42	QRSA08J-104YN	RESISTOR
	R43	QRSA08J-101YN	RESISTOR
	R44	QRSA08J-223YN	RESISTOR
	R45	QRSA08J-223YN	RESISTOR
	R46	QRSA08J-152YN	RESISTOR
	R50	QRD167J-750	RESISTOR
	R51	QRSA08J-102YN	RESISTOR
	R52	QRSA08J-563YN	RESISTOR
	R53	QRSA08J-682YN	RESISTOR
	R54	QRSA08J-820YN	RESISTOR
	R55	QRSA08J-330YN	RESISTOR
	R57	QRSA08J-123YN	RESISTOR
	R58	QRSA08J-223YN	RESISTOR
	R59	QRSA08J-181YN	RESISTOR
	R60	QRSA08J-682YN	RESISTOR
	R61	QRSA08J-222YN	RESISTOR
	R62	QRSA08J-101YN	RESISTOR
	R63	QRSA08J-222YN	RESISTOR
	R64	QRSA08J-222YN	RESISTOR
	R65	QRSA08J-102YN	RESISTOR
	R66	QRSA08J-393YN	RESISTOR
	R67	QRSA08J-153YN	RESISTOR
	R68	QVZ3531-102	V RESISTOR , RETURN Y LEV
	R69	QRSA08J-562YN	RESISTOR
	R70	QRSA08J-182YN	RESISTOR
	R71	QRSA08J-222YN	RESISTOR
	R72	QRSA08J-103YN	RESISTOR
	R73	QVZ3513-223	V RESISTOR , AGC LEV
	R74	QRSA08J-272YN	RESISTOR
	R76	QRSA08J-181YN	RESISTOR
	C1	QCFA1EZ-104	CAPACITOR
	C2	QER41EM-475	E CAPACITOR
	C3	QEPA1CM-106	NP E CAPACITOR
	C4	QEK41AM-107	E CAPACITOR
	C5	QER41EM-475	E CAPACITOR
	C6	QEPA1CM-106	NP E CAPACITOR
	C7	QER41EM-475	E CAPACITOR
	C8	QEK41AM-107	E CAPACITOR
	C9	QER41CM-106	E CAPACITOR
	C10	QCSA1HJ-330	CAPACITOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C11	QCSA1HJ-101	CAPACITOR
	C12	QER41CM-476	E CAPACITOR
	C13	QER41CM-476	E CAPACITOR
	C14	QEPA1CM-106	NP E CAPACITOR
	C15	QER41EM-475	E CAPACITOR
	C16	QER41EM-475	E CAPACITOR
	C17	QEK41AM-107	E CAPACITOR
	C18	QER41EM-475	E CAPACITOR
	C19	QER41CM-106	E CAPACITOR
	C20	QCFA1EZ-104	CAPACITOR
	C21	QETA0JM-337	E CAPACITOR
	C22	QER41CM-106	E CAPACITOR
	C23	QCYA1HK-103	CAPACITOR
	C24	QCYA1HK-103	CAPACITOR
	C25	QER41CM-476	E CAPACITOR
	C26	QEE41CM-475	E CAPACITOR
	C27	QER41HM-105	E CAPACITOR
	C28	QEE41CM-225	E CAPACITOR
	C29	QCTA1CH-560	CAPACITOR
	C30	QEM41AK-107	E CAPACITOR
	C31	QCSA1HJ-220	CAPACITOR
	C32	QCSA1HJ-220	CAPACITOR
	C33	QCSA1HJ-270	CAPACITOR
	C50	QCYA1HK-223	CAPACITOR
	C51	QER41CM-476	E CAPACITOR
	C52	PU54990-3	E CAPACITOR
	C53	QER41CM-476	E CAPACITOR
	C54	QER41CM-106	E CAPACITOR
	C55	QER41CM-106	E CAPACITOR
	C56	QCSA1HJ-5R0	CAPACITOR
	C60	QCYA1HK-223	CAPACITOR
	C61	QCYA1HK-223	CAPACITOR
	C62	QCYA1HK-223	CAPACITOR
	C63	QCYA1HK-223	CAPACITOR
	C65	QCYA1HK-223	CAPACITOR
	C66	QCYA1HK-223	CAPACITOR
	L1	PGZ00638-221K	COIL
	L2	PGZ00638-221K	COIL
	L3	PGZ00638-221K	COIL
	L4	PGZ00638-221K	COIL
	L5	PGZ00637-220K	COIL
	L6	PGZ00637-100K	COIL
	SW1	PGZ00717	SLIDE SWITCH
	SW2	PGZ00717	SLIDE SWITCH
	SW3	QSS4301-004	SLIDE SWITCH
	HD1	PGD30428	CONNECTOR HOLDER
	JA1	PGZ00527	2PIN JACK ASSEMBLY
	J1	PGZ00409	PIN JACK
	SLD1	PGD40915	SPACER
	TB1	PGZ00591	BNC CONNECTOR
	TB2	PGZ00592	7PIN CONNECTOR
	VA3	PU49624-2	VARISTOR
	CN1	PGZ00658-12	CONNECTOR, (CN A)
	CN2	PGZ00658-8	CONNECTOR, (CN B)
	CN3	PGZ00658-9	CONNECTOR, (CN C)
	CN4	PGZ00658-10	CONNECTOR, (CN D)
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

-ADAPTER BOARD (2) ASSY-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PGE10097A2-02	ADAPTER BOARD (2) ASSEY
	IC10	8VT15	IC
	IC11	CXL5003M	IC
	IC12	CXL5003M	IC
	IC13	AN607P	IC
	IC14	8VT15	IC
	Q20	2SC2778C	TRANSISTOR
	Q21	2SC2778C	TRANSISTOR
	Q22	2SA1022C	TRANSISTOR
	Q23	2SC2778C	TRANSISTOR
	Q24	2SC2778C	TRANSISTOR
	Q25	2SC2778C	TRANSISTOR
	Q26	FMW1	TRANSISTOR
	Q27	FMW1	TRANSISTOR
	Q28	FMW1	TRANSISTOR
	Q29	2SA1022C	TRANSISTOR
	Q30	2SA1022C	TRANSISTOR
	Q31	2SA1022C	TRANSISTOR
	Q32	2SC2778C	TRANSISTOR
	Q33	2SC2778C	TRANSISTOR
	Q34	2SC2778C	TRANSISTOR
	Q35	2SA1022C	TRANSISTOR
	Q36	2SC2778C	TRANSISTOR
	Q37	2SC2778C	TRANSISTOR
	Q38	2SC2778C	TRANSISTOR
	Q39	2SA1022C	TRANSISTOR
	Q40	2SC2778C	TRANSISTOR
	Q41	2SC2778C	TRANSISTOR
	Q42	FMW1	TRANSISTOR
	Q43	FMW1	TRANSISTOR
	Q44	FMW1	TRANSISTOR
	Q45	2SA1022C	TRANSISTOR
	Q46	2SA1022C	TRANSISTOR
	Q47	2SA1022C	TRANSISTOR
	Q48	2SC2778C	TRANSISTOR
	Q49	2SC2778C	TRANSISTOR
	Q50	2SC2778C	TRANSISTOR
	Q51	2SC2778C	TRANSISTOR
	Q52	2SA1022C	TRANSISTOR
	Q53	2SC2778C	TRANSISTOR
	Q54	2SC2778C	TRANSISTOR
	Q55	2SC2778C	TRANSISTOR
	Q56	2SB709	TRANSISTOR
	Q57	2SC2778C	TRANSISTOR
	Q58	2SA1022C	TRANSISTOR
	Q100	2SD601A(QR)	TRANSISTOR
	Q101	2SD601A(QR)	TRANSISTOR
	Q102	2SD601A(QR)	TRANSISTOR
	D10	1SS133	DIODE
	D11	1SS133	DIODE
	R100	QRSA08J-561YN	RESISTOR
	R101	QRSA08J-103YN	RESISTOR
	R102	QRSA08J-223YN	RESISTOR
	R103	QRSA08J-222YN	RESISTOR
	R104	QRSA08J-391YN	RESISTOR
	R105	QRSA08J-222YN	RESISTOR
	R106	QRSA08J-391YN	RESISTOR
	R107	QRSA08J-391YN	RESISTOR
	R108	QRSA08J-332YN	RESISTOR
	R109	QRSA08J-333YN	RESISTOR
	R110	QRSA08J-273YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R111	QRSA08J-333YN	RESISTOR
	R112	QRSA08J-273YN	RESISTOR
	R113	QRSA08J-392YN	RESISTOR
	R114	QRSA08J-681YN	RESISTOR
	R115	QRSA08J-102YN	RESISTOR
	R116	QVZ3513-152	V RESISTOR , DL2 LEV
	R117	QRSA08J-222YN	RESISTOR
	R118	QRSA08J-392YN	RESISTOR
	R119	QRSA08J-391YN	RESISTOR
	R120	QRSA08J-182YN	RESISTOR
	R121	QRSA08J-473YN	RESISTOR
	R122	QRSA08J-473YN	RESISTOR
	R123	QRSA08J-223YN	RESISTOR
	R124	QRSA08J-222YN	RESISTOR
	R125	QRSA08J-223YN	RESISTOR
	R126	QRSA08J-181YN	RESISTOR
	R127	QRSA08J-223YN	RESISTOR
	R128	QRSA08J-181YN	RESISTOR
	R129	QRSA08J-222YN	RESISTOR
	R130	QRSA08J-223YN	RESISTOR
	R131	QRSA08J-181YN	RESISTOR
	R132	QRSA08J-223YN	RESISTOR
	R133	QRSA08J-181YN	RESISTOR
	R134	QRSA08J-222YN	RESISTOR
	R135	QRSA08J-223YN	RESISTOR
	R136	QRSA08J-222YN	RESISTOR
	R137	QRSA08J-102YN	RESISTOR
	R138	QRSA08J-102YN	RESISTOR
	R139	QRSA08J-0R0Y	RESISTOR
	R140	QRSA08J-222YN	RESISTOR
	R141	QRSA08J-104YN	RESISTOR
	R142	QVZ3513-103	V RESISTOR , CCD BIAS1
	R143	QRSA08J-223YN	RESISTOR
	R144	QRSA08J-103YN	RESISTOR
	R145	QRSA08J-222YN	RESISTOR
	R146	QRSA08J-102YN	RESISTOR
	R147	QRSA08J-102YN	RESISTOR
	R148	QRSA08J-222YN	RESISTOR
	R149	QRSA08J-104YN	RESISTOR
	R150	QVZ3513-103	V RESISTOR , CCD BIAS2
	R151	QRSA08J-472YN	RESISTOR
	R152	QRSA08J-222YN	RESISTOR
	R153	QRSA08J-102YN	RESISTOR
	R154	QVZ3513-102	V RESISTOR , 2H DL LEV
	R155	QRSA08J-223YN	RESISTOR
	R156	QRSA08J-103YN	RESISTOR
	R157	QRSA08J-102YN	RESISTOR
	R158	QRSA08J-102YN	RESISTOR
	R159	QVZ3513-102	V RESISTER , 2H DL
	R160	QRSA08J-122YN	RESISTOR
	R161	QRSA08J-181YN	RESISTOR
	R162	QRSA08J-152YN	RESISTOR
	R163	QRSA08J-223YN	RESISTOR
	R164	QRSA08J-103YN	RESISTOR
	R165	QRSA08J-122YN	RESISTOR
	R166	QRSA08J-681YN	RESISTOR
	R170	QRSA08J-102YN	RESISTOR
	R171	QRSA08J-561YN	RESISTOR
	R172	QRSA08J-152YN	RESISTOR
	R173	QRSA08J-473YN	RESISTOR
	R174	QRSA08J-473YN	RESISTOR
	R175	QRSA08J-223YN	RESISTOR
	R176	QRSA08J-222YN	RESISTOR
	R177	QRSA08J-181YN	RESISTOR
	R178	QRSA08J-223YN	RESISTOR
	R179	QRSA08J-223YN	RESISTOR
	R180	QRSA08J-181YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R181	QRSA08J-222YN	RESISTOR
	R182	QRSA08J-181YN	RESISTOR
	R183	QRSA08J-223YN	RESISTOR
	R184	QRSA08J-223YN	RESISTOR
	R185	QRSA08J-181YN	RESISTOR
	R186	QRSA08J-222YN	RESISTOR
	R187	QRSA08J-223YN	RESISTOR
	R188	QRSA08J-222YN	RESISTOR
	R189	QRSA08J-223YN	RESISTOR
	R190	QRSA08J-103YN	RESISTOR
	R191	QRSA08J-102YN	RESISTOR
	R192	QRSA08J-102YN	RESISTOR
	R193	QRSA08J-222YN	RESISTOR
	R194	QVZ3513-102	V RESISTOR , YH LEV
	R195	QRSA08J-222YN	RESISTOR
	R196	QRSA08J-102YN	RESISTOR
	R197	QRSA08J-102YN	RESISTOR
	R198	QRSA08J-223YN	RESISTOR
	R199	QRSA08J-103YN	RESISTOR
	R200	QRSA08J-102YN	RESISTOR
	R201	QRSA08J-102YN	RESISTOR
	R202	QVZ3513-102	V RESISTOR , C COMB DL
	R203	QRSA08J-560YN	RESISTOR
	R204	QVZ3513-222	V RESISTOR , C COMB LEV
	R206	QRSA08J-222YN	RESISTOR
	R207	QRSA08J-222YN	RESISTOR
	R208	QRSA08J-333YN	RESISTOR
	R209	QRSA08J-333YN	RESISTOR
	R210	QRSA08J-333YN	RESISTOR
	R211	QRSA08J-333YN	RESISTOR
	R212	QRSA08J-562YN	RESISTOR
	R213	QRSA08J-471YN	RESISTOR
	R214	QVZ3513-222	V RESISTOR , Y OUT LEV
	R215	QRSA08J-222YN	RESISTOR
	R216	QRD167J-750	RESISTOR
	R217	QRSA08J-271YN	RESISTOR
	R218	QRD167J-820	RESISTOR
	R219	QRSA08F-103YN	RESISTOR
	R220	QRSA08F-104YN	RESISTOR
	R221	QRSA08F-104YN	RESISTOR
	R222	QRSA08F-103YN	RESISTOR
	R223	QRSA08F-104YN	RESISTOR
	R224	QRSA08F-104YN	RESISTOR
	R225	QRSA08J-332YN	RESISTOR
	R226	QRSA08J-102YN	RESISTOR
	R227	QRSA08J-223YN	RESISTOR
	R228	QRSA08J-123YN	RESISTOR
	R229	QRSA08J-272YN	RESISTOR
	R230	QVZ3513-332	V RESISTOR , C OUT LEV
	R231	QRSA08J-152YN	RESISTOR
	R232	QRSA08J-471YN	RESISTOR
	R233	QRSA08J-0R0Y	RESISTOR
	R234	QRSA08J-0R0Y	RESISTOR
	R235	QRSA08J-0R0Y	RESISTOR
	R236	QRSA08J-152YN	RESISTOR
	R237	QRSA08J-181YN	RESISTOR
	R238	QRD161J-222	RESISTOR
	R300	QRSA08J-181YN	RESISTOR
	R301	QRSA08J-123YN	RESISTOR
	R302	QRSA08J-223YN	RESISTOR
	R303	QRSA08J-820YN	RESISTOR
	R304	QRSA08J-330YN	RESISTOR
	R305	QRSA08J-563YN	RESISTOR
	R306	QRSA08J-682YN	RESISTOR
	R307	QRSA08J-331YN	RESISTOR
	R308	QRSA08J-103YN	RESISTOR
	R309	QRSA08J-682YN	RESISTOR

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#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R310	QRSA08J-104YN	RESISTOR
	R311	QRSA08J-104YN	RESISTOR
	C100	QER40JM-476	E CAPACITOR
	C101	QER41CM-476	E CAPACITOR
	C102	QCYA1HK-223	CAPACITOR
	C103	QCTA1CH-470	CAPACITOR
	C104	QER40JM-476	E CAPACITOR
	C105	QER40JM-476	E CAPACITOR
	C106	QEPA0JM-476	NP E CAPACITOR
	C107	QCTA1CH-6R0	CAPACITOR
	C108	QER41CM-106	E CAPACITOR
	C109	QER41CM-106	E CAPACITOR
	C110	QER41CM-106	E CAPACITOR
	C111	QER41CM-106	E CAPACITOR
	C112	QER41CM-106	E CAPACITOR
	C113	QER41CM-106	E CAPACITOR
	C114	QER41CM-106	E CAPACITOR
	C115	QER41CM-476	E CAPACITOR
	C116	QCYA1HK-223	CAPACITOR
	C117	QCYA1HK-223	CAPACITOR
	C118	QER40JM-476	E CAPACITOR
	C119	QCYA1HK-223	CAPACITOR
	C120	QER41HM-104	E CAPACITOR
	C121	QCYA1HK-223	CAPACITOR
	C122	QER41CM-476	E CAPACITOR
	C123	QCYA1HK-223	CAPACITOR
	C124	QCYA1HK-223	CAPACITOR
	C126	QCTA1CH-151	CAPACITOR
	C127	QCYA1HK-223	CAPACITOR
	C128	QER40JM-476	E CAPACITOR
	C129	QCYA1HK-223	CAPACITOR
	C130	QER41HM-104	E CAPACITOR
	C131	QCYA1HK-223	CAPACITOR
	C132	QER41CM-476	E CAPACITOR
	C133	QCYA1HK-223	CAPACITOR
	C134	QCYA1HK-223	CAPACITOR
	C136	QCYA1HK-223	CAPACITOR
	C137	QCTA1CH-100	CAPACITOR
	C138	QCYA1HK-223	CAPACITOR
	C139	QCYA1HK-223	CAPACITOR
	C140	QER41CM-476	E CAPACITOR
	C141	QCYA1HK-223	CAPACITOR
	C142	QCYA1HK-223	CAPACITOR
	C144	QER41CM-106	E CAPACITOR
	C145	QER41CM-106	E CAPACITOR
	C146	QER41CM-106	E CAPACITOR
	C147	QEPA1AM-106	NP CAPACITOR
	C148	QEPA1AM-106	NP CAPACITOR
	C149	QEPA1AM-106	NP CAPACITOR
	C150	QEPA1AM-106	NP CAPACITOR
	C151	QER41CM-106	E CAPACITOR
	C152	QER41CM-476	E CAPACITOR
	C153	QCYA1HK-223	CAPACITOR
	C154	QCYA1HK-223	CAPACITOR
	C155	QER41CM-476	E CAPACITOR
	C156	QCYA1HK-223	CAPACITOR
	C157	QCYA1HK-223	CAPACITOR
	C158	QCTA1CH-220	CAPACITOR
	C159	QCYA1HK-223	CAPACITOR
	C160	QER40JM-476	E CAPACITOR
	C161	QER41CM-476	E CAPACITOR
	C162	QCYA1HK-223	CAPACITOR
	C163	QCTA1CH-120	CAPACITOR
	C164	QETA0JM-337	E CAPACITOR
	C165	QCTA1CH-331	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C168	QCTA1CH-100	CAPACITOR
	C169	QCYA1HK-223	CAPACITOR
	C170	QCTA1CH-220	CAPACITOR
	C171	QER41EM-335	E CAPACITOR
	C200	QER41CM-476	E CAPACITOR
	C201	QCSA1HJ-100	CAPACITOR
	C202	QER41CM-476	E CAPACITOR
	C203	QCYA1HK-223	CAPACITOR
	C204	QER41CM-476	E CAPACITOR
	C205	QER41CM-106	E CAPACITOR
	C206	QCYA1HK-102	CAPACITOR
	L10	PGZ00638-221K	COIL
	L11	PGZ00638-221K	COIL
	L12	PGZ00638-221K	COIL
	L14	PGZ00638-221K	COIL
	L15	PGZ00638-221K	COIL
	L16	PGZ00638-221K	COIL
	L17	PGZ00638-221K	COIL
	L18	PGZ00638-221K	COIL
	L19	PGZ00638-221K	COIL
	LPF2	PGZ00941	LOW PASS FILTER
	LPF3	PGZ00942	LOW PASS FILTER
	LPF4	PGZ00941	LOW PASS FILTER
	DL1	PGZ00486	DELAY LINE
	DL2	PGZ00486	DELAY LINE
	DL3	PGZ00131-003	DELAY LINE
⚠	XB1	PU59642	CRYSTAL RESONATOR
	K1	PGZ00627	CHIP FERRITE BEADS
	K2	PGZ00627	CHIP FERRITE BEADS
	K3	PGZ00627	CHIP FERRITE BEADS
	TH1	ERT-D2FGL301S	THERMISTOR
	TH2	ERT-D2FFL400S	THERMISTOR
⚠	VA1	PU49624-2	VARISTOR
⚠	VA2	PU49624-2	VARISTOR
	VA5	PU49624-2	VARISTOR
	VA6	PU49624-2	VARISTOR
	TP1	PGZ00587-00	TEST POINT, X8
	CN1	PU58844-14	CAP HOUSING
	CN2	PU58844-5	CAP HOUSING
	CN3	PU58844-13	CAP HOUSING
	CN4	PU58844-15R	CAP HOUSING
	CN5	PGZ00659-12	CONNECTOR, (CN A)
	CN6	PGZ00659-8	CONNECTOR, (CN B)
	CN7	PGZ00659-9	CONNECTOR, (CN C)
	CN8	PGZ00659-10	CONNECTOR, (CN D)